GENERAL LIBRARY
JUN 22 1920
UNIV. OF MICH.

The JOURNAL of the NATIONAL DENTAL ASSOCIATION

VOLUME VII | NUMBER SIX

$2.00 A YEAR | 20 CENTS A COPY

STUDY · PUBLISH · RECORD

JUNE, 1920

Gold Inlays.—*Volland.*

Pyorrhea, Treatment of Pulpless Teeth.—*Howe.*

External Alveolectomy.—*Shearer.*

Solving the Oral Hygiene Problem.—*King.*

A Review of Dental Literature.—*Bunting.*

Resorption of Apex and Fibrosis of the Pulp.—*McConnell.*

A Note on Staining and Mounting.—*Hopewell-Smith.*

Oral Hygiene in Relation to Public Health.—*Fones.*

Proposed Tax on Material Used in the Healing Arts.—*Editorial.*

Boston Meeting—A Seminar Course

Preliminary Program - -	*Page 549*
List of Exhibitors - - -	*Page 563*
Historical Boston - - -	*Page 566*
National Golf Tournament - -	*Page 570*

Make Hotel Reservations Now—See Page 472 May Issue

CONTENTS

Page

Officers 1920—Section Society Officers.....Frontispieces

ORIGINAL COMMUNICATIONS.

Gold Inlays.
By R. H. Volland, M. DI., D. D. S., M. D.....479

Pyorrhea, The Focal Theory of Infection, the Treatment of Pulpless Teeth.
By Percy R. Howe, A. B., D. D. S.....491

External Alveolectomy.
By William Lete Shearer, M. D., D. D. S.....499

Solving the Oral Hygiene Problem.
By Otto U. King, D. D. S.....505

A Review of Dental Literature.
By Russell W. Bunting, D. D. Sc.....518

Resorption of Apex and Fibrosis of the Pulp.
By Guthrie McConnell, M. D.....530

A Note on Staining and Mounting Sections of the Dental Tissues.
By Arthur Hopewell-Smith, Sc. D., L. R. C. P., M. R. C. S., L. D. S.....532

Oral Hygiene in Relation to Public Health.
By Alfred C. Fones, D. D. S.....534

EDITORIAL DEPARTMENT.

The Delay in the Delivery of The Journal and the "Paper Shortage".....545
Proposed Tax on Material Used in the Healing Arts.....546

THE BOSTON SESSION.

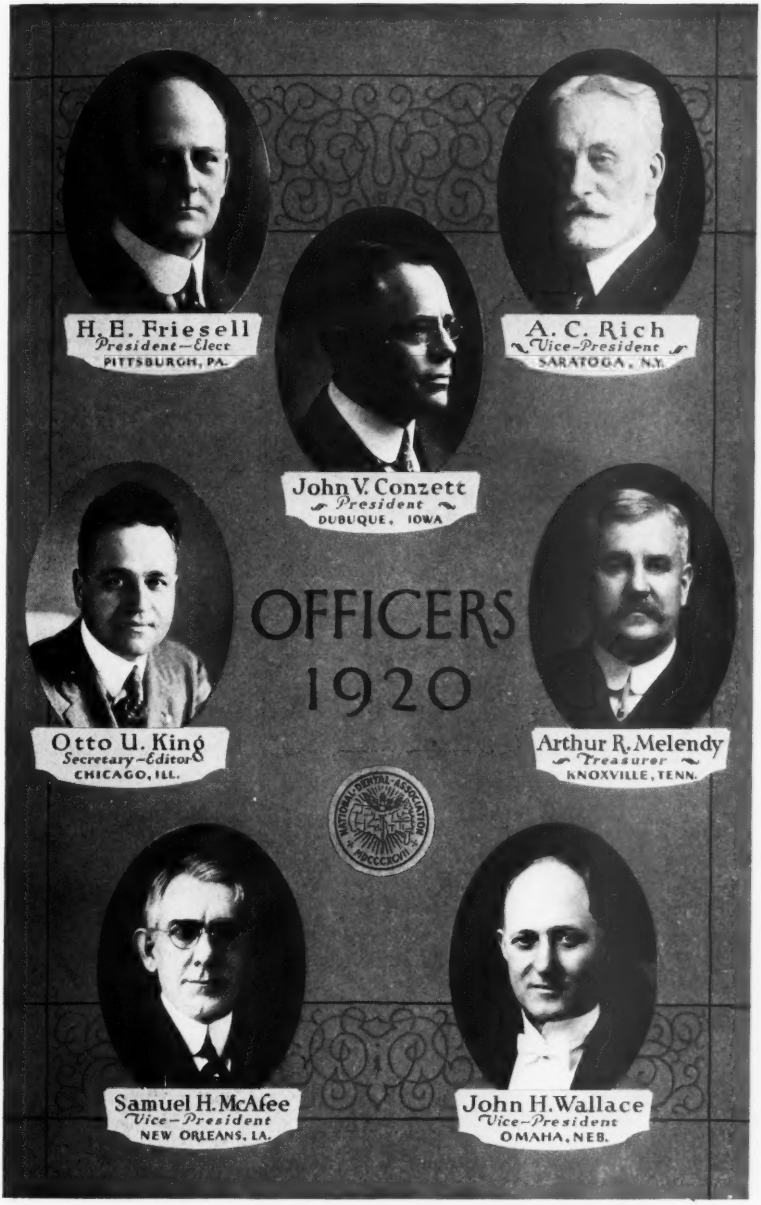
Preliminary Program of the Scientific Sessions.....549
List of Exhibitors.....563
Special Notice to Exhibitors.....566
Attend 1920 Meeting and See Historic Boston.....566
The National Dental Golf Tournament, Boston, August 23-27, 1920.....570

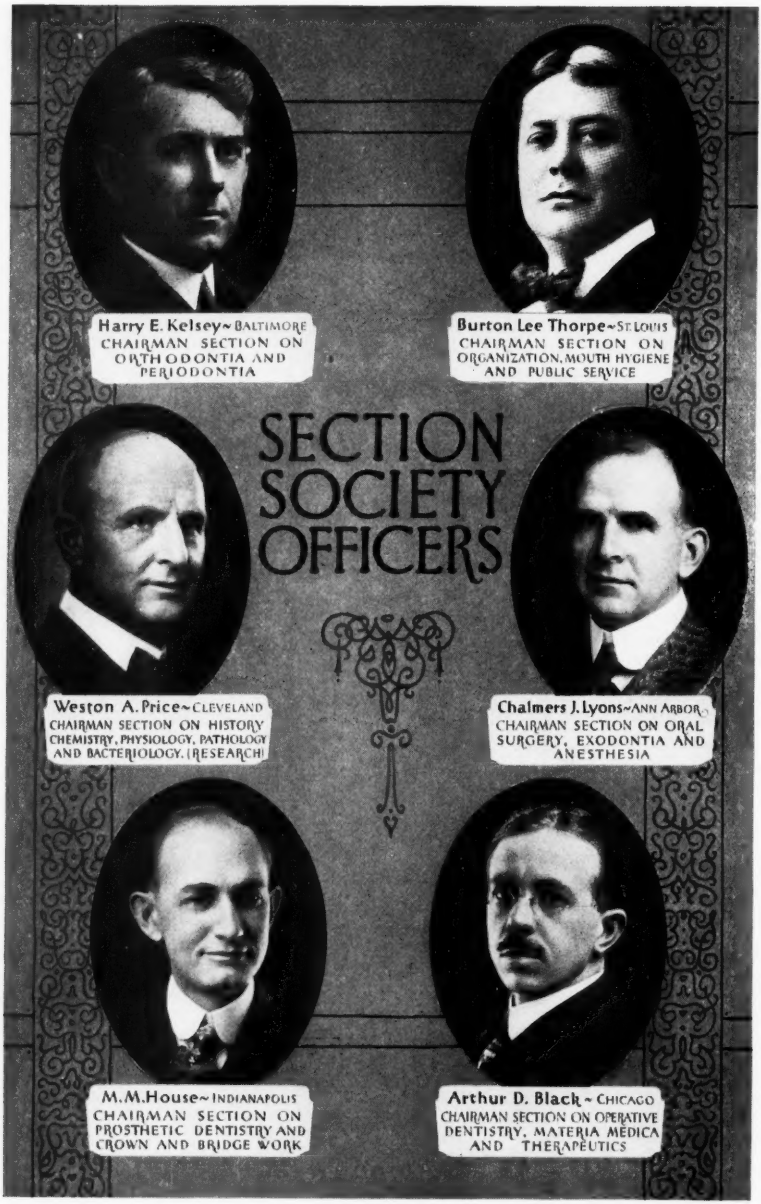
ANNOUNCEMENTS.

National and State Dental Societies Meetings.—Meetings State Boards of Dental Examiners.—Louisiana State Dental Society.—New Mexico State Dental Society.—New Mexico State Dental Society.—Canadian Dental Association.—North Carolina Dental Society.—Maine Dental Society.—Idaho State Dental Association.—Southern California Dental Association.—Virginia State Dental Association.—Delaware State Board of Dental Examiners.—West Virginia State Board.—Board of Dental Examiners, District of Columbia.—The New Jersey State Dental Society.—Reunion 1915 Class Baltimore College of Dental Surgery.—Wisconsin State Dental Society.—Delta Sigma Delta Fraternity Annual Meeting 1920.—Preparedness League of American Dentists Report on French-Belgian Fund.—Books and Journals Wanted for a National Association Dental Library.....572-576

ADVERTISING DEPARTMENT.

Index A-91
Classified Section.....A-87–A-89


H. E. Friesell
President–Elect
PITTSBURGH, PA.
A. C. Rich
Vice-President
SARATOGA, N.Y.
John V. Conzett
President
DUBUQUE, IOWA
OFFICERS
1920
Otto U. King
Secretary–Editor
CHICAGO, ILL.
Arthur R. Melendy
Treasurer
KNOXVILLE, TENN.
Samuel H. McAfee
Vice–President
NEW ORLEANS, LA.
John H. Wallace
Vice–President
OMAHA, NEB.


SECTION SOCIETY OFFICERS
Harry E. Kelsey~ BALTIMORE
CHAIRMAN SECTION ON ORTHODONTIA AND PERIODONTIA
Burton Lee Thorpe~ ST. LOUIS
CHAIRMAN SECTION ON ORGANIZATION, MOUTH HYGIENE AND PUBLIC SERVICE
Weston A. Price~ CLEVELAND
CHAIRMAN SECTION ON HISTORY CHEMISTRY, PHYSIOLOGY, PATHOLOGY AND BACTERIOLOGY. (RESEARCH)
Chalmers J. Lyons~ ANN ARBOR
CHAIRMAN SECTION ON ORAL SURGERY, EXODONTIA AND ANESTHESIA
M.M. House~ INDIANAPOLIS
CHAIRMAN SECTION ON PROSTHETIC DENTISTRY AND CROWN AND BRIDGE WORK
Arthur D. Black~ CHICAGO
CHAIRMAN SECTION ON OPERATIVE DENTISTRY, MATERIA MEDICA AND THERAPEUTICS

THE JOURNAL
OF THE
National Dental Association
VOL. 7 JUNE, 1920 NO. 6

Original Communications.

GOLD INLAYS.

By R. H. Volland, D.D.S., M.D., Iowa City, Iowa.

(Read before the National Dental Association at Its Twenty-third Annual Session, New Orleans, La., October 20-24, 1919.)

A CORRECTLY prepared cavity, a perfect adaptation of the filling material or inlay to the cavity walls and margins, and a properly finished restoration are the essentials of a good operative reproduction. The steps are fundamental and the ultimate success of the restoration will be in direct ratio to the perfection attained in the execution of the details of these steps. It cannot be said that one step is any more important than the others. A perfect cavity preparation containing a poorly adapted filling, even tho the finish be excellent, will fail. Likewise a perfectly adapted filling in an ill-shaped cavity is doomed to failure. Clinical observation brings out the fact that neglect in shaping and finishing fillings and inlays accounts for the failure of many restorations. Filling material overhanging the margins, poorly shaped embrasures and interproximal spaces, flat or even convex occlusal surfaces, lack of or improperly formed contact points, together with neglect of polish, are just as great a menace to the longevity and service of the restoration as are poor cavity preparation and imperfect adaptation. The possible bad effects upon the gum and peridental membrane of these imperfectly finished restorations should be borne in mind.

In reviewing the current dental literature, it is noticeable that much is being written about the casting of inlays. These articles and opinions come from all parts of the country, proving that much thought is being expended and much experimentation is being done

along this particular portion of the inlay process. More or less is being said about the final finish of castings. Considerable discussion has taken place concerning the relative merits of the direct and indirect methods of making inlays. Out of this free exchange of ideas, more or less standardization in the manufacture of the inlay itself is gradually taking place. By this standardization a very decided improvement in the quality and accuracy of castings

Figure 1.

Mesio-occlusal cavity for a gold inlay in upper first bicuspid.

has been accomplished. But from clinical observations, it is apparent that there is much room for improvement and standardization of the cavity preparation,—the first fundamental of a creditable operation. The gold inlay cannot take its deserved place as a filling until a cavity preparation is made with just as much thought and care as that used in making a cavity for a foil filling. Many dentists think it is necessary to use a cavity of entirely different form and technic than that used in making a foil or amalgam filling. Dr. G. V. Black gave the profession a *system* of cavity preparation founded upon demonstrable scientific facts. It requires only a very slight modification in minor details to adapt this system to the use of gold inlays.

In the time allotted to a paper on this subject, a full discussion of all the cavity preparations for gold inlays would be out of the question but the writer wishes to direct attention to proximo-occlusal and mesio-occluso-distal cavities because it is in these cavities that gold inlays are most often indicated.

In discussing these cavities it is well to keep in mind that a proximo-occlusal cavity is the basal cavity of a mesio-occluso-distal. (Figure 1). In other words a mesio-occluso-distal cavity is merely the combining a mesio-occlusal and a disto-occlusal cavity in the same tooth. (Figure 2). Any modifications of the single types in combining them in the double type are modifications of minor importance and are necessary only to make the combination.

The same necessity for "extension for prevention" is present when making an inlay cavity as when making a foil or amalgam cavity. (Figure 3). There was never a more logical principle propounded in operative dentistry and it should be followed at all times. As far as recurrent caries is concerned, the most vulnerable point is the surface junction of the filling material and the tooth substance. Therefore the margin of a cavity should be located in those areas that are comparatively immune to caries. The gingival margin should be carried under the free margin of the gum. The presence of a healthy free gum margin covering the gingival margin of an inlay is the best obtainable safeguard against recurrent caries in that location. When extensive recession of the gums has occurred, a gingival margin may be left in the gingival third of the crown unless the caries has extended on the cementum when the gingival margin must be carried farther apically. A cemental margin is not wholly described but circumstances sometimes require the locating of a gingival margin on the cementum.

Interproximal spaces from which the gum septum has disappeared are usually wide accessible so with a little care on the part of the patient these margins

to the axial line angles of the tooth are immune because the friction of food, tooth brush, tongue, lips, and cheeks keep them clean. Since practically all

Figure 2.

Mesial Occlusal Distal

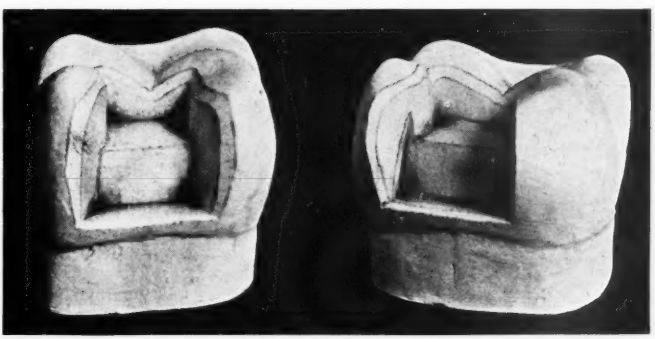
Three views of a mesio-occluso-distal cavity for a gold inlay in upper first bicuspid.

can be kept clean and comparatively safe whether they be enamel or cemental margins.

The buccal and the lingual margins

of these agencies are pliable and adaptable substances when they rub a line angle, not only the extreme crest of the angle is cleaned but the tooth surface a

Figure 3.



A B

Mesio-occlusal cavities in upper first molars.

A—For Gold Inlay. B—For Gold Foil Filling.

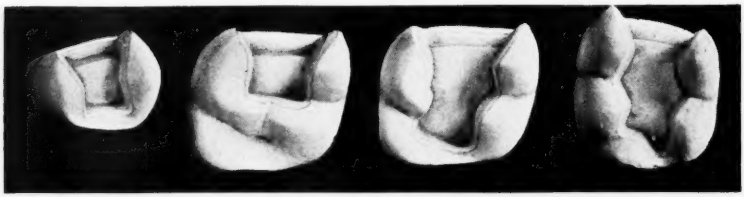
of the proximal portion of the cavity should be extended to a position at or near the axial line angles of the tooth. The words "at or near" are used advisedly. The areas immediately adjacent

short distance on each side of the crest also receives effective scouring. The presence of this longitudinal clean area along the axial line angles gives some latitude in locating these margins. Each

cavity presents its own problems in lateral extension but an operator will have no trouble in making right decisions if he will keep in mind the fact that the buccal and lingual margins of the proximal portion of this type of cavity must be kept clean by mechanical means; so extension must be made sufficient to permit this type of cleansing. The proper extension of the occlusal portion of the cavity is accomplished by carrying the margins up the inclines of the cusps and remaining marginal ridges so that when the inlay is finished with a concave occlusal surface, food, when being masticated, will sweep over these margins and keep them clean. (Figure 4.) Deep fissures and grooves that pass from the central area of the occlusal surface toward, or even over, the marginal ridges, (Figure 5) must be followed out until they become shallow and of a form that will permit the accurate finishing of the inlay. Some further slight extension beyond that required strictly for prevention may be necessary for convenience in adapting the wax, removing the pattern, providing resistances, and protecting walls and cusps that have been weakened by caries and accidents. (Figure 6.) However, if the problems related strictly to extension for prevention are properly solved, these other necessary extensions are easily determined and executed. (Figure 7.)

The cavity shape which will cause its walls to absorb the stress brought upon the inlay or filling during mastication is

Figure 4.

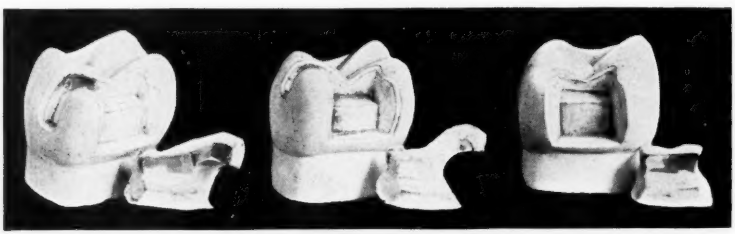


A B C D

Occlusal views of four proximo-occlusal cavities.

A—Mesio-occlusal cavity in upper first bicuspid.
B—Mesio-occlusal cavity in upper first molar.
C.—Mesio-occlusal cavity extending over the oblique ridge in upper first molar.
D—Mesio-occlusal cavity in lower first molar.

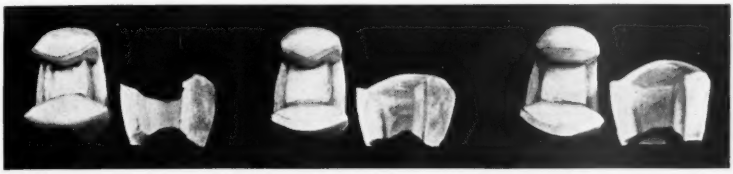
Figure 5.



Disto-occlusal cavity in upper first molar showing treatment of disto-lingual fissure.

known as resistance form. Therefore, resistance form is best accomplished by preparing the walls of the cavity flat and at right angles or parallel to the line of stress to which the inlay is subjected.

Figure 6.

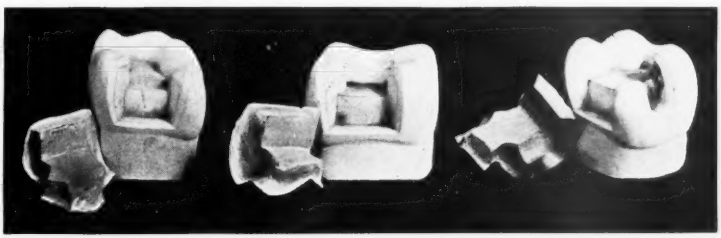


A B C

Three mesio-occluso-distal cavities in upper first bicuspids.
A—Both cusps left standing.
B—Buccal cusps cut down for protection.
C—Both cusps cut down for protection.

Such a cavity offers the maximum amount of resistance. (Figure 8.) The following of this principle evolves the preparation of a cavity, the majority of whose walls meet each other at right angles. It is desirable to cut the plane of the enamel wall in line with the length of the enamel rods and if any deviation from this arrangement is made, the external not the internal ends of the rods should be sacrificed. Since the arrangement of enamel rods at the line angles is fan shape, it is necessary to make the bucco-axial and linguo-axial angles obtuse. Some operators contend that an inlay cavity should be made "hopper shape," thereby implying at least that there should be a decided divergence of the walls from the bottom of the cavity to the surface of the tooth. Tapered burs and stones for this purpose are on the market. For convenience in adapting the wax, removing the pattern and seating the inlay, the outlet of a cavity should be just slightly larger than the bottom but the degree of divergence of the walls should be very slight. The more nearly that opposite walls are parallel and that internal angles are right

Figure 7.



A B C

A—Mesio-occlusal cavity in lower first molar. Mesio-buccal cusp protected.
B—Mesio-occlusal cavity in upper first molar. Mesio-buccal cusp protected.
C—Mesio-occlusal cavity in lower first molar. Mesio-buccal cusp protected and mesio-buccal groove followed out.

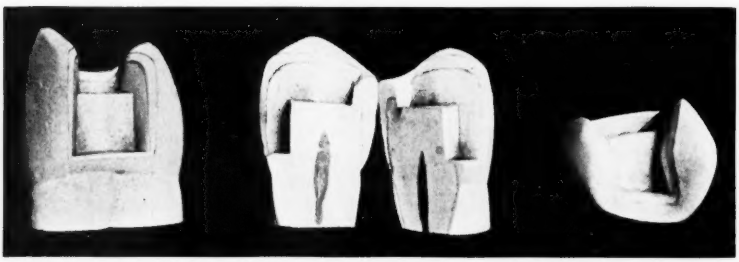
angles, the greater is the resistance form. It may be necessary to change the outline of the occlusal portion of the cavity to provide a *slight* dovetail to prevent the inlays being displaced proximally. However, in extending for prevention, the dovetail is usually provided. An inlay is prevented from displacement occlusally by frictional resistance. Frictional resistance is obtained by the close adaptation of the inlay to these practically parallel opposite walls of the cavity and by cementation. A cork is held in the mouth of a bottle by the frictional resistance and the frictional resistance is in proportion to the adaptation or tightness of the cork to the mouth of the bottle. The cementing of a cork in the mouth of a bottle will also contribute to the adaptation and add to the frictional resistance.

The walls of a cavity should be made smooth. This facilitates the adaptation of the wax, the safe removal of the pattern, and the close seating of the inlay. The angles of the cavity should be cut clear and definite. These definite angles add greatly to the resistance form of the cavity and also provide positive seating guides for the inlay.

The cavo-surface angle should be beveled. Since the proximal surface of a tooth is convex, in beveling the cavo-surface angle on the buccal and lingual walls, care should be taken to see that the bevel is cut so the wax pattern can be shed without distortion. (Figure 3.) Much discussion has taken place concerning the probability of the fit or misfit of the inlay in cavities with beveled and butt joint cavo-surface angles. If it is desirable to have gold and amalgam protect the enamel margins by beveling the cavo-surface angle, then it is desirable to have that portion of the inlay that covers the bevel of an inlay cavity perform a like function. It is sometimes argued that this portion of the inlay that covers the bevel is thin enough to be burnished tightly to the tooth substance but it is the writer's opinion that very little good is actually accomplished by such burnishing. It is far better to produce an inlay that does not require such manipulation to insure fit.

A correctly fitting inlay can be made only when a perfect wax pattern has been procured and that pattern accurately reproduced in gold. Comparatively little difficulty is encountered in making and removing with a sprue or explorer tine a wax pattern of a proximo-occlusal cavity. (Figure 9.) One of the principal difficulties in handling wax patterns for mesio-occluso-distal cavities is the difficulty in removing them from the cavity without distortion. It is the writer's opinion that such patterns

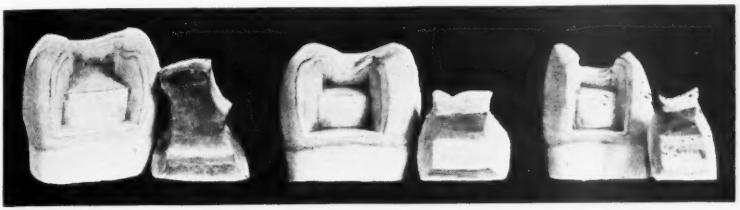
Figure 8.



Views of a mesio-occlusal cavity in an upper first bicuspid. The longitudinal mesio-distal section shows the relation of the internal walls of the cavity.

should be removed with the sprue attached in the *center* of the occlusal surface of the pattern. (Figure 10.) The location of the sprue permits direct occlusal drawing of the pattern from

Figure 9.



Three proximo-occlusal cavities and wax patterns.

cavities in bicuspids and seems to insure more accurately fitting castings. But in molar restorations this method of removal is difficult in most mouths. (Figure 11.) To overcome this difficulty, most mesio-occluso-distal resto-

Figure 10.

Sprue attached to the center of the occlusal surface of a mesio-occluso-distal wax pattern.

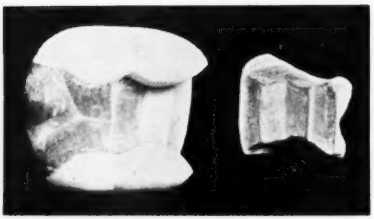
rations in molars can be made in two pieces—a mesio-occlusal portion and a disto-occlusal portion. (Figure 12). One of these inlays can be made and set, then the gold wall which will be at the junction of the two inlays can be shaped as if it were tooth substance, and the second inlay made. Or the pattern can be made for one portion of the cavity, care being taken to avoid destroying the contact point on this pattern. The surface of the wax which is to join with the second pattern may be given a light coat of olive oil to prevent the second wax from adhering to the first. When the first pattern has cooled to mouth temperature the second pattern can be made. By carefully removing the patterns in the reverse order

Figure 11.

Mesio-occluso-distal cavity in a lower first molar. The distal cusps are cut away slightly to provide protection.

in which they were made there is little danger of distortion of the patterns and the two inlays will be found to make a perfect junction with each other. In the large majority of cases the buccal and lingual walls of the occlusal portion of the cavity are sufficiently strong to permit the forming of a dovetail outline for each inlay. When only one of these

Figure 12.

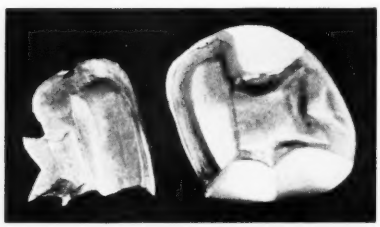


Same cavity as Figure 11, with the distal half of the restoration in place. The mesio-occlusal portion is represented by the wax pattern at the side.

Figure 13.

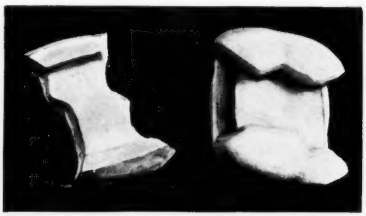
A mesio-occluso-distal cavity in an upper first molar. The disto-lingual cusps have been entirely cut away. So a cavity provides dovetail for but one inlay.

Figure 14.



The same cavity as Figure 13, with mesio-occlusal portion of the inlay set. The disto-occlusal portion is dovetailed into first part.

Figure 15.

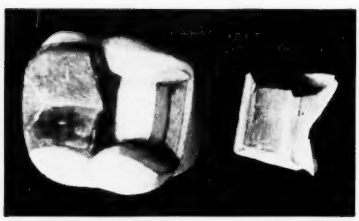


A mesio-occluso-distal cavity in an upper first molar and a one-piece wax pattern.

Figure 16.

A mesio-occluso-distal cavity in a lower second molar. The buccal cusps have been cut away so the inlay will protect them.

Figure 17.



Same cavity as Figure 16, with the disto-occlusal portion of the inlay in place. The wax pattern for the mesio-occlusal portion is at the side.

dovetails can be obtained in the tooth substance (Figure 13) the first inlay can be made utilizing this dovetail and the second inlay can be dovetailed into the first. (Figure 14.)

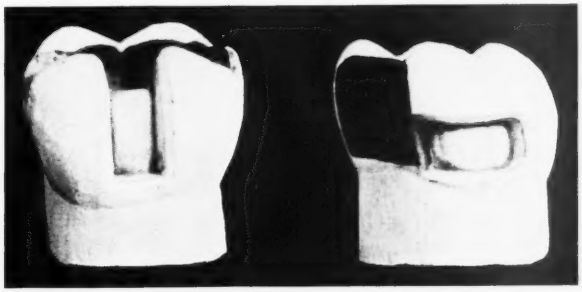
By the use of this two-piece method of making mesio-occluso-distal restorations in molars a minimum amount of tooth substance needs to be sacrificed. When making a one-piece mesio-occluso-distal inlay in a molar many times it is necessary to sacrifice considerable tooth substance merely to insure a safe removal of the wax pattern. The final adjusting of contact points on a one-piece mesio-occluso-distal casting is difficult, while with a two-piece inlay, these adjustments are comparatively simple.

In some cases it is desirable and necessary to make a one-piece mesio-occluso-distal restoration in a molar. (Figure 15.) Great care must be used in drawing the pattern and attaching the sprue in the center of the occlusal surface without distorting the pattern.

In cases where it is necessary to protect with the inlay cusps and walls which have been weakened by the loss of dentin, (Figure 16) the two-piece method can be used also. (Figure 17.) In types of cavities other than mesio-occluso-distal, (Figure 18) where three or more surfaces of the tooth are involved, the inlay can be handled to advantage by the two or even three-piece method.

The conservation of tooth substance, ease of making and removing of perfect wax pattern, the elimination of the possible warpage that often occurs in making large irregular castings, thus insuring a higher percentage of properly fitting inlays, are the arguments in favor of the method of procedure outlined above.

Figure 18.



A B

A—A two-piece mesio-occluso-distal inlay in position and cavity prepared in buccal groove.

B—A mesio-occlusal inlay set and a gingival cavity in the buccal surface prepared.

Discussion.

Wallace Wood Jr., D. D. S., New Orleans, La.

Dr. Volland has left very little room for discussion of his paper so ably presented, and as beautifully illustrated as he has followed minutely the system of cavity preparation and extension for prevention as laid down in Dr. G. V. Black's system of operative dentistry as is now being taught in the curriculum of all the leading dental colleges thruout the world. But for the benefit of the

few practitioners who have not had the opportunity to study Dr. Black's system, let me impress upon them the importance of becoming acquainted with it in its most complete detail, as the fundamental principles of modern dentistry are entirely based upon it, and as Dr. Volland has said, never was a more logical principle propounded in operative dentistry, and it should be followed at all times.

In the preparation of the class of cavities referred to in the essay, the knowledge of comparative anatomy should be taken advantage of and religiously adhered to, so as to better facilitate the rapidity and ease of preparation "along the lines of cleverage," and the straightening of cavity margins by avoiding short enamel rods as much as practical at the cavo-surface angle, which should not be as great as for foil gold, as it is packed against them, but should be done sufficient to avoid all frail edges as the chipping away of these edges and exposing the cement is a frequent cause of failure to the gold inlay.

The burnishing of the gold over the surfaces to obtain better fitting margins I quite agree with the essayist, as being bad practice as it powders and pulverizes the margin so that eventually, there will be a space between tooth structure and the gold, which is also another frequent cause of failure; and the final polishing of filling towards the tooth structure should be sufficient to draw the gold down closely in actual contact with the tooth structure.

Resistance Form is not quite so necessary as retention form. This is largely augmented by the tensile strength of the gold inlay and Dr. Volland is correct in the statement that cavity walls should be as nearly parallel as possible and close adaptation obtained by smooth walls devoid of the slightest indentation, and in this respect let me impress the importance of obtaining the tight fitting of the inlay by smooth straight walls rather than by distortion of the wax pattern, which becomes roughened or distorted in its withdrawal, and the dependence of an easy withdrawal should be on smooth walls and not the hopper-shaped as referred to by the essayist.

Great care should be exercised in the treatment of the wax pattern and it should not be forced into the cavity under great pressure as it possesses a large degree of elasticity and, unless invested immediately, this elasticity will slowly release this compression and the wax pattern will expand. Sudden changes of temperature will have a similar effect, either contracting or expanding the wax, thus resulting in imperfect adaptation by change in the size of the cast.

Just a few words regarding methods of casting that may be overcome, the liability of warping of large, irregular-shaped castings referred to by the essayist.

All metals expand when subjected to heat (with a few exceptions) and contract or shrink when cold; this is true especially of gold and its alloys, resulting in possible warping in irregular-shaped casts. This may be overcome by resorting to the *centrifugal* method of casting, for as the molten gold in the space occupied where the shrinkage takes place, additional molten gold is added, that is to say, the gold cools off first at the farthest distance from the heat and as the contraction takes place, additional gold is added to that part that is commencing to cool and causing contraction, thus forcing the contraction to take place in that part nearest the heat, which is in the sprue or core end or excess part of the mass.

This is why the surfaces of the sprue end of the core in centrifugal casting are always convex instead of perfectly flat, as in the case of other methods of casting. This fact is easily proven by casting two spherical pieces of zinc (the metal of greatest shrinkage) of exactly

the same size pedunculated one upon the other and so invested that one is farther from the center than the other.

After casting and cold, the one nearest the excess core will be found to be smaller, centrifugal force causing the displacement of the shrinkage in that part farthest from the center, thus causing it to take place in that part nearest the core.

In all other methods of casting the force or pressure is applied equally thruout the entire mass, and is greater after congealing commences which allows the shrinkage to take place in all parts of the cast and in an irregular mass. The largest diameters will naturally shrink more than the small ones, and as that part of the gold which we desire to have the least shrinkage in, is that part of the inlay which is more essential to a perfect fit, namely; the margin of that which covers the marginal bevel, and second, of all the cavity walls and as it is essential that that part of the casting should congeal first, which is only possible by the centrifugal method.

In regard to the making of the inlays in *two* or *more* pieces, some advantage may be obtained by this method in securing proximal contacts without separation and in withdrawing the wax pattern when difficulty is found in paralleling measual or distal walls or where line angles are more or less undercut.

But as the *contact* point is the most important factor, in filling teeth, the writer prefers to resort to separation for unless unusual care is exercised in the final polishing of the filling, the contact so eminently desired, is lost. Better a good contact with proximating teeth and a poor filling rather than a good filling with poor contacts, for if the filling fails, it can be replaced but when poor contacts are allowed the tooth is eventually lost. However, if the two-piece method is applied at different settings, the advantage of only one separation may be obtained, or rather a mechanical separator may be used for the first casting for immediate separation and other methods may be used for the second, thus facilitating access without inconvenience to the operator or patient, and thereby securing the proper contacts.

There is nothing else in the essay presented that permits of much discussion, as it deals with concrete facts that are indisputable, and I quite agree in all that has been said.

One more suggestion I might offer that facilitates cast inlays in being fitted quickly and with the least trouble, and that is, as soon as the casted inlay is removed from the investment and thoroly washed, dip it into powdered saltpeter (potassium nitrate) heat it to a red color and plunge it into hydrochloric acid, being careful to obtain but a minute quantity, just sufficient to run over and cover the filling when melted, otherwise a violent explosion will take place and scatter acid over an area of several feet.

There is no danger, however, in using the smallest quantity that can be taken up by simple touching of the powder with the moist inlay. This cleans the surface quickly and conveniently, removing all oxides, firebrands, and silicates, etc., that may be, and generally are, adhering to the surface.

W. L. Fickes.

While reading a paper of Dr. Volland's which appeared in the May number of The Journal of the National Dental Association on the subject of the "Gold Inlay," I was impressed by the simplicity of his description and method. The mystery of the inlay was dissipated and its construction seemed simple and easy. Without a doubt skillful technicians can make perfect inlays by the methods described. The paper just read supplements the paper alluded to and in style and method is equally terse and logical. However, to those who have not been properly

trained, these methods of construction would not prove to be so simple and easy.

Gold inlays involve problems and require a degree of skill which very few appreciate. This statement is readily substantiated by the many failures in the work. There is no other class of work with which dentists have done more damage to their patients. The delusion of its simplicity of construction and the patients ignorance of values have made it a seductive practice to unskilled and unscrupulous operators. Perfect inlays can be made by exceptionally skillful operators but the vast majority of gold inlays are worthless.

To improve the practice it will be necessary to teach the principles involved in cavity preparation and construction of inlays and in addition to that, it should also be taught that each method involves definite requirements for correct technic. Variations in materials, manipulation of materials and technic of casting give rise to varying results.

The practice of inlay construction would be improved if the number of cases were greatly reduced. It seems to be the opinion of many operators, equally skillful in the placing of gold foil, amalgam and inlay fillings, that the gold inlay should have a very limited field. It is a valuable method, but it has been greatly abused. It should only be used when a good gold foil or amalgam filling cannot be made or is not indicated.

Dr. Volland gives instructions for cavity preparation for inlays which do not conflict with the principles promulgated by Dr. G. V. Black. I believe that those principles are essential and that if they were thoroly understood by inlay workers there would be less difference of opinion as to correct method and form. There are fundamental principles which should not be disregarded for any particular method of filling or filling material. I fully approve of Dr. Volland's methods of cavity preparation as described in his paper. Further comment on cavity preparation is unnecessary.

In the selection of materials for inlays, consideration should be given to the relation of the properties of the various materials used. The technic should also be based upon that relationship. It may be designed either by emperical or scientific method but whether it is known to the operator or not, he arrives at perfect results by scientific method. Proper relationship of coefficients of expansion, the influence of form on distortion, the effects of pressure on materials, the influence of temperature on the model, the investment and the metal are factors in the form and size of inlays.

A beautiful piece of work, resulting from expert knowledge and skill, deserves the greatest care in the toilet of the cavity, cementation and finishing. The selection of a good adhesive cement, the mixing of it to the most adhesive condition in which it could be conveniently worked, and careful finishing are each necessary to success. Perfect tooth form, retention and adaptation are equally important.

If you produce perfect inlays by your method then you know that you have the correct combination of materials and technic and that your technic complies with scientific requirements.

R. H. Volland (closing): My motive in writing this paper was because I feel that cavity preparation has been slighted in gold inlay work. Reference was made to the fact that most men, especially of the foil persuasion, are of the opinion that a gold inlay is not in any class the equal of a gold foil filling, but it is my belief that a gold inlay made with the same care and thought as a gold foil filling will take its place alongside of gold foil fillings very easily. I thank you.

PYORRHEA, THE FOCAL THEORY OF INFECTION, THE TREATMENT OF PULPLESS TEETH.

By Percy R. Howe, A. B., D. D. S., Boston, Mass.
Assistant Professor of Dental Research Harvard University.
Chief of Research Laboratory The Forsyth Dental Infirmary for Children.

PART I. PYORRHEA.

(Read before Chicago Dental Society, February 17, 1920.)

PYORRHEA, the focal theory of infection, and the treatment of pulpless teeth have a common ground of interest in that they all relate to the question of the teeth as factors in health and in disease.

At the present time the importance of the teeth to health is minimized to the lowest degree. Their danger to health is magnified beyond all reason. When extreme views occupy the center of the stage it is a wholesome and beneficial thing to review carefully the data upon which such ideas are based, and to go back to general principles and to consider them so far as they are understood in respect to health and to disease.

In this paper I wish to discuss dental diseases for the sake of the teeth themselves, with a view to preserving them for the purposes for which nature intended them. I wish to consider constructive dentistry as opposed to present-day destructive dentistry. There are two major principles that I shall treat principally of in order that we may grasp once and for all the true relationship between the two so far as dental diseases are concerned. These are nutrition and infection.

There are many who believe that pyorrhea is caused by an infection. Some believe that the so-called streptococcus viridans is the cause. Others that such anaerobes as the spirochaetes and the fusiform bacilli cause it. Still others believe that a mixed infection is the cause. Such microorganisms as are found in pyorrhea pockets usually belong to the ordinary mouth flora. These microorganisms are present in all mouths from youth to old age. If the infection is the cause of the pyorrhea it should be a perfectly simple matter to establish the disease in these accessible parts by the injection of such microorganisms. The disease should follow the injection not once but always. I have isolated many of the microorganisms from pyorrhea pockets and have injected them in pure culture and in mixed culture into the gums and about the necks of the teeth of animals as described elsewhere.* In no case did anything but spontaneous healing occur. Others have tried similar experiments but no one has succeeded in establishing a condition that evenly remotely simulates pyorrhea by the injection of any of these microorganisms, or any group of them. The infection is then not the etiological factor. We must then look elsewhere for the

*The Journal of the National Dental Association, May, 1919.

cause. Just how and when the normal alimentary flora invades the tissue is not wholly understood. But enough is known to show that a previous preparation of the part or parts is required before they are invaded.

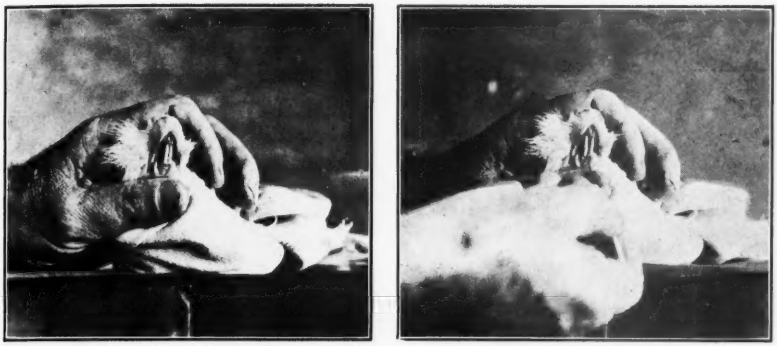
Noguchi in his work upon pyorrhea, and from which he isolated and cultured in pure culture the Treponema mucosum and dentium, has stated to me that these microorganisms will not grow upon sound tissue. They are not the etiological factor but an anomolous metabolic condition is the cause. Metchnikoff states that the system is normally refractive to the alimentary flora and that it is only when and where this normal resistance is lowered that the microbic life invades the parts. Many other students have repeatedly shown the same thing. The infection in pyorrhea is not the cause of the trouble but it is a secondary matter.

The nearest approach to the experimental production of a condition that is similar to pyorrhea, is brought about by experimental feeding and of the type that has been called scorbutic. In the guinea-pig and in other animals it has been shown that if all the salts, carbohydrates, and protein that have been considered necessary for the vital requirements of the animal are furnished, the animals will not grow nor reproduce properly. They soon die. They are subject to various infections. Other food factors have been shown to be necessary. These accessory but necessary substances are found in certain fats, as butter fat, cod-liver oil, etc.; others in the leaves and tops of vegetables as distinct from the seeds; still others in fruit juices. A great amount of study is being given to these substances. A new outlook upon nutrition has already been obtained. The dental effects are more marked than any that have been hitherto obtained. It is to some of these that I desire to call your attention. The teeth of animals whose diet is deficient in these respects loosen in about three weeks. Their gums become red, spongy, and bleed easily. The pulps of the teeth seem to be one of the first things affected. They undergo degenerative changes as does the tissue about the teeth. The joints of these animals are sensitive and swollen. They are rheumatic. Here is another fact to consider before accepting too fully the infectious theory of rheumatic conditions. Their eyes are affected. Their hair loses its luster. If the experiment has not been carried too far the correction of the diet will be followed by a return to a normal condition. I have extended this condition over a considerable period by feeding mainly a deficient diet, giving as little whole milk and vegetables as was possible and yet maintain life. I have been able to produce a very extensive absorption of the alveolus. Carious areas in the bones of the jaws and head and what I consider to be true dental caries have been produced. The teeth become elongated and irregular. They are very loose. They become softened and bent. Pockets are established. Frequently the alveolus is entirely absorbed and the teeth are retained solely by the soft tissue. In some of the teeth the pulp has entirely disappeared. I shall have to reserve for other papers a detailed description of this work for it is quite extensive.

The accompanying illustrations show some of these effects which I believe are more pronounced than any dental effects previously produced experimentally.

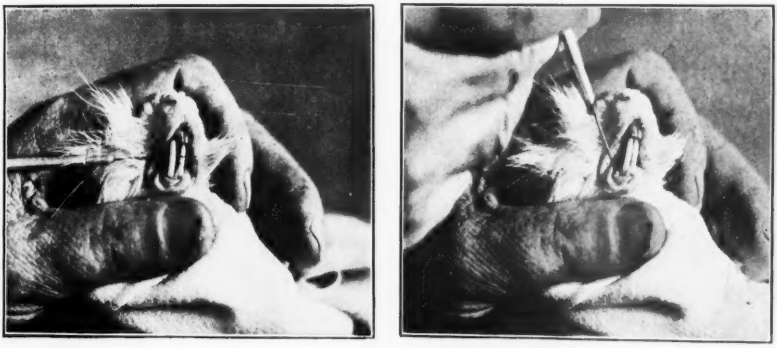
The effects here shown and that are brought about by deficient diets are of the greatest interest to the dentist. They are equally instructive to the physician for they have to do not only with the question of sound teeth but also many of the questions of race development or race degeneracy. But we must confine ourselves to pyorrhea. It is clear that the introduction of infection into the gums produces no effect. Here we have produced a condition that is very similar

Figure 1.



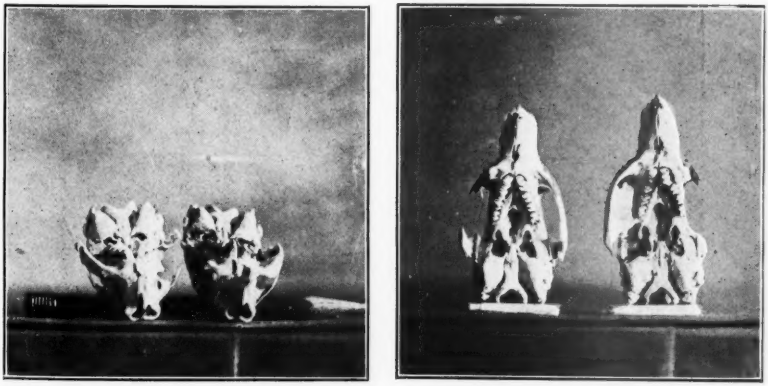
Showing looseness of lower incisors.

Figure 2.



Looseness of lower incisors and depth of pocket.

Figure 3.



Shows difference in length of molars.
Note alveolar absorption above first and second molars and control on left.

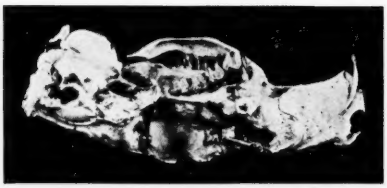
Figure 4.

Control at left shows elongation of molars on right.

Figure 5.

Larger view of control.

Figure 6.

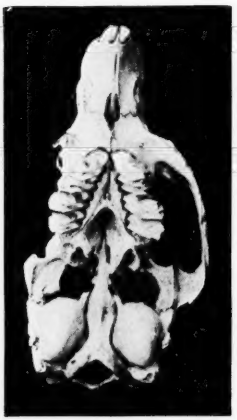


Larger view of experimental animal elongation of first and second molars, irregular and very loose, with alveolar absorption.

Figure 7.

Alveolar absorption, with looseness, irregularity and elongation.

Figure 8.



Alveolar absorption—teeth loose and elongated and carious.

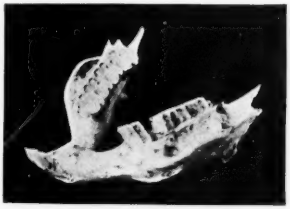
Figure 9.

Absorption in palatal region—teeth loose and soft.

Figure 10.

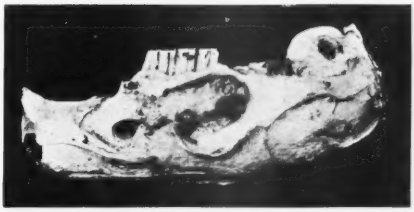
Elongation, alveolar absorption, teeth loose and soft.

Figure 11.



Looseness with irregularity, alveolar carious.

Figure 12.



Absorption of alveolus, teeth elongated.

Figure 13.

Teeth elongated and bent incisors carious.

Figure 14.

Alveolus carious and entirely gone about lower left molar.

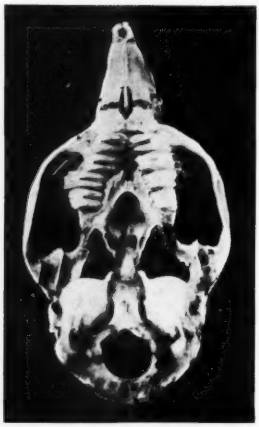
Figure 15.

Absorption of alveolus-carious and gone about the distal molars.

Figure 16.

Alveolar absorption—teeth very soft.

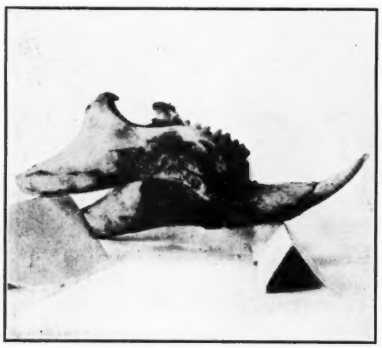
Figure 17.



Carious palate, loose teeth, soft and bent—Note carious incisors.

Pocket about incisors and pathological bone.

Figure 18.



Carious jaw—Guinea Pig.

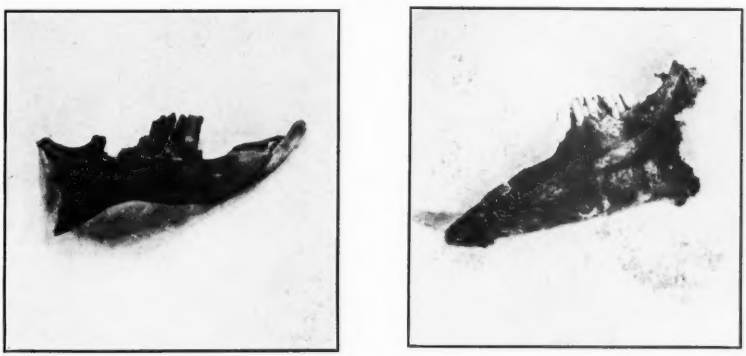
Carious jaw—Rabbit.

to pyorrhea. The nutritional factor is the cause while the infective part is secondary. The control lies in the nutritional condition. The pyorrhea that follows diabetes is a nutritional disturbance. So is the pyorrhea of alcoholism or phosphorous or mercurial poisoning. The pyorrhea of syphilis follows the nutritional disturbance that is brought by the disease. A mechanical interference of the proper functioning of the part acts in the same manner. The treatment is surgical with the use of sharp instruments and the avoidance of trauma as much as possible. Continually is it to be remembered that the infection is secondary. A free flow of blood is the best antiseptic in the world. Restore the teeth to normal occlusion and stay them. Keep the parts clean. Do

Figure 19.

Carious Jaws—Carious places in teeth.

Figure 20.



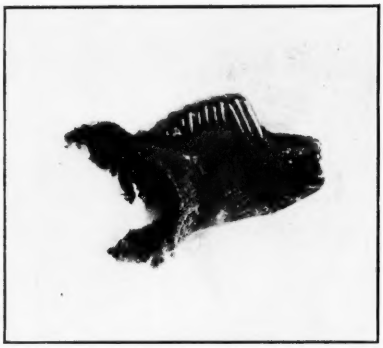
Carious jaws and teeth.

what can be done to maintain proper functioning in the tissues about the teeth and search for the underlying cause. Detect the difficulty early and begin treatment. The teeth are necessary factors in nutrition and every effort should be made to save them.

We have shown that the infection of pyorrhea is secondary. That the microorganisms found in the pockets will not grow on sound tissue. It is fair to assume that just as this microbic life acts here, it acts elsewhere. I shall attempt to show that it does in the discussion of the focal theory of infection as it is applied to the teeth. A most astounding list of diseases have been held to be caused by pyorrhea and many believe it. The vast majority of these diseases are not to be considered of infectious origin but just as in pyorrhea, so here the infection is a secondary matter.

Figure 21.

Carious skulls.

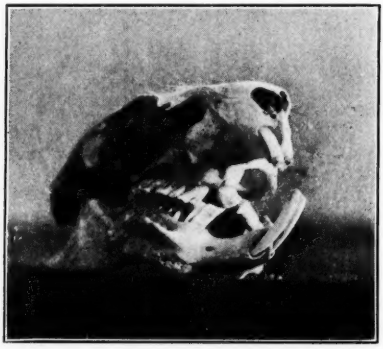


Carious jaws.

Figure 22.

Carious jaws—loose teeth.

Figure 23.



Teeth malposed.

EXTERNAL ALVEOLECTOMY.

By William Lete Shearer, M. D., D. D. S., Omaha, Nebraska.

(Read before the National Dental Association at Its Twenty-third Annual Session, New Orleans, La., October 20-24, 1919.)

THE definite establishment of the relationship between mouth infections and systemic disease has fixed a new responsibility on the oral surgeon. Patients formerly came direct to us, chiefly to obtain relief from pain, and our service consisted in relieving their suffering.

No serious thought was given to its possible relationship to subsequent remote disease of the body, but the advance of science has made many changes within the last few years.

Now cases in ill health, suffering from some obscure etiological factor, are referred to us by physicians with the idea that with the removal of mouth pathology the condition might be benefited.

A closer association has, therefore, sprung up between the physician and the dentist with the result that new responsibilities have been added to both.

It has been my privilege to observe both the clinical and operative end results in a large series of cases representing the various systemic manifestations with which mouth infections seem to be associated.

Unsatisfactory results following the usual operative procedures led to many doubting the importance of mouth infection and placed these operations in the category of pernicious meddling.

A critical examination of these operative procedures seem to indicate that they have failed in their objective.

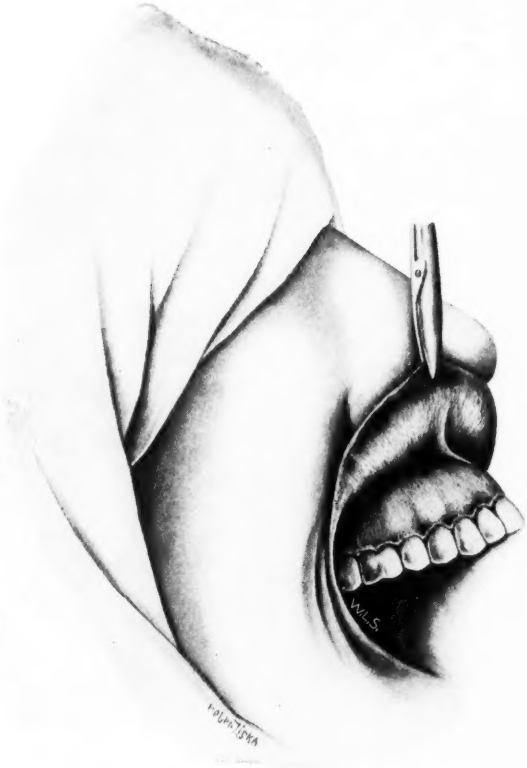
Plate 1.

Modified External Alveolectomy. A common condition where the buccal plate of bone is involved and the granuloma firmly attached to the muco-periosteum. It is impossible to treat this condition without turning back a flap. When this flap is turned back the granuloma has the appearance of a bull's eye.

We have been content, heretofore, with the mere extraction of diseased teeth. Later we added to this technic the curettement of the socket from which the tooth had been removed. The inefficiency of either one of these procedures was apparent as far as the removal of the focus of infection was concerned. This was especially true when the pathology was extensive and involved many teeth.

Radiograms taken some time after the usual procedures disclosed unmistakable evidence of failure in our efforts to remove disease. Remaining osteomyelitic areas and granulomata and the like were definitely shown. Furthermore, the systemic reactions following these procedures, especially where the extractions had been numerous, and the curettements extensive were at times alarming. The tooth sockets drained for days and weeks with a foul discharge which oozed from the reddened, inflamed gums, and responded slowly to any form of treatment.

Plate 1.



Shows a mouth where for reasons of pathology and dental mechanics it becomes necessary to remove all the teeth.

In addition to the local disturbance, systemic reactions frequently occurred which were manifested by chills, fever and lassitude, that would last for days. Increase in the leucocyte count was common.

chronic dento-alveolar abscesses and their contiguous diseased areas, we are dealing with a chronic osteomyelitis.

Mere extraction, or extraction plus curettage, disregards the fundamental principles of bone surgery. We know

Plate 2.

Complete External Alveolectomy. The technic of reflecting the muco-periosteum up and backward above the root ends of the teeth after the teeth have been removed.

This forced us to compromise, do our work piecemeal, make a few extractions at a sitting and thus to unduly prolong the period of suffering to the patient without, unfortunately, benefiting the patient's ultimate condition.

Such failures can be easily understood when we appreciate that in treating bone surgery demands the removal of dead bone, removal of granulomata, and collapse of bone cavities as far as possible.

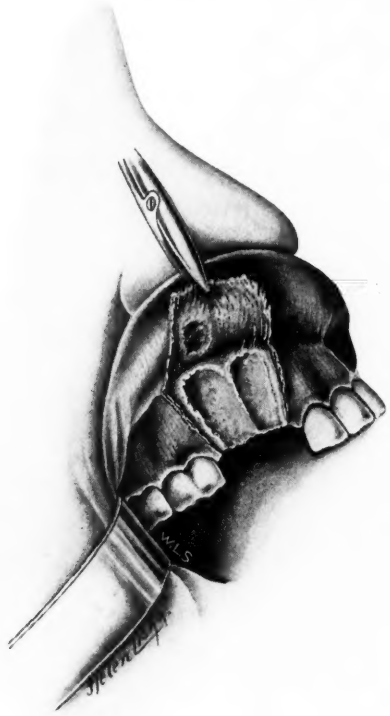
Patients were frequently annoyed by extrusions of spiculae of bone, some of which would appear weeks after the operation.

The end results of the operation and the realization of the desired result by the physician and patient depends upon the certainty with which the entire pathology is removed by the oral surgeon.

The failure on our part to completely remove the pathology promises just as uncertain results as when the Rhinologist fails to completely remove a diseased tonsil which has been acting as a focus of infection.

The responsibilities incident to co-operative medicine and surgery being well appreciated, and being repeatedly impressed with the deficiencies of the usual methods of mouth surgery, I sought for a technic which would satisfy the demand for the complete removal of the mouth pathology.

Plate 2.



Disease removed and the bone trimmed to form, as in the complete external alveolectomy.

In 1905 I designed an operation for the complete removal of the external alveolar plate of bone, in order to facilitate the fitting of more pleasing dentures; in other words, for cosmetic purposes only. The object of this operation was to so prepare a mouth that a set of den-

tures could be made whereby normality could be more perfectly restored.

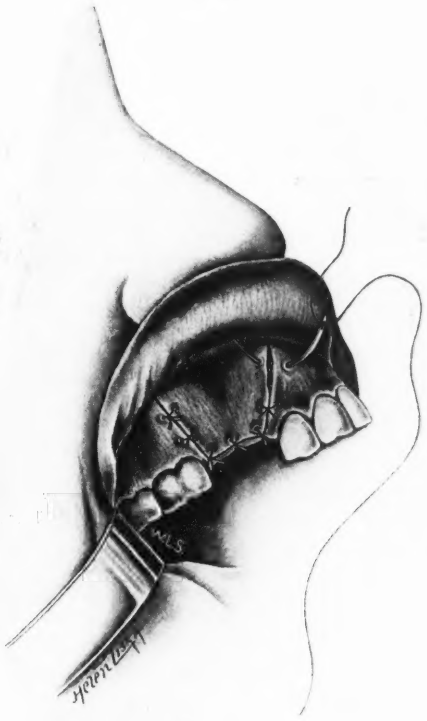
It was noted, however, that those cases with extensive pathology, reacted very little following such a seemingly radical operation.

on sound surgical principles and it could be made to fulfill the demand for complete removal of the diseased areas.

The technic of the operation is as follows:

Novocain nerve block anesthesia. The

Plate 3.



The muco-periosteum returned to normal position. I desire to call attention to the design of this operation in so far as it protects the cemento-enamel junction of the adjoining tooth and enables the operator to remove the tooth without injury to the attachment of the fibers of the peridental membrane. Many teeth are prematurely lost by undue injury at the time of removal of the adjoining tooth.

My attention being repeatedly called to the importance of complete removal of mouth pathology, it occurred to me that I had at hand, a technic, which, with slight modifications, might be applied to the problem. It was founded

teeth are removed, the muco-periosteum is reflected up to the root ends of the tooth sockets, the external alveolar plate of bone is taken off, the diseased tissue is attended to under the eye. The bone is smoothed, leaving no jagged edges, the

lingual, buccal, gingival mucosa trimmed and sutured with horse-hair. The sutures are removed in from four to five days.

found useful to those doing this class of surgery. They are not patented and are given to the profession for what they are worth.

Plate 3.

The external alveolar plate removed and the diseased tissue entirely taken care of under the eye. The bone trimmed to form.

Plate 4.

The muco-periosteal flap brought back into position and closed with horse-hair. Would advise the use of continuous suture in experienced hands.

Special Rongeur Forcep.

With this forcep one is able to look thru and see just the amount of bone and tissue removed. One may remove the buccal plate of bone next to the cheek easily without the picking up of gauze, rubber glove, mucous membrane of the mouth, etc.

Special instruments, such as rongeur forceps of different kinds, chissels, etc., are needed. To better satisfy certain steps of the technic, I designed a special rongeur forcep which, it is hoped will be

I can not refrain from expressing my appreciation of certain remarks made by Dr. Rosenau, in so far as they speak for the so long desired, and surely necessary, cooperation in this work.

SOLVING THE ORAL HYGIENE PROBLEM.

THE THREE PROBLEMS.

By Otto U. King, D. D. S., Chicago, Illinois.

(Read before the National Dental Association at Its Twenty-third Annual Session, New Orleans, La., October 20-24, 1919.)

VICTOR HUGO, in his introduction to Les Miserables, written in 1862, held before us the three problems of his age. Let us read the entire paragraph:

"So long as there shall exist, by reason of law and custom, a social condemnation, which, in the face of civilization, artificially creates hells on earth and complicates a destiny that is divine with human fatality; so long as three problems of the age—the degradation of man by poverty, the ruin of woman by starvation, and the dwarfing of childhood by physical and spiritual might are not solved; so long as, in certain regions, social asphixia shall be possible; in other words, and from a yet more extended point of view, so long as misery and ignorance remain on earth, books like this shall not be useless."

I wonder if we are not confronted with the same problems. Surely millions are degraded by poverty, and the ruin of women by starvation or the fear of starvation, ever stares us in the face. One hundred and fifty thousand died last year from tuberculosis, a disease which is curable and preventable. More than one million persons in our fair land are suffering from this terrible scourge right now, and yet tuberculosis is preventable.

Reliable statistics would indicated that among our "unavailable" assets in this country must be numbered some one billion decayed teeth, scattered thru the mouths of our millions, and not only causing discomfort, and, because of impaired mastication, interfering with proper nutriment, but probably responsible for a larger measure of physical and mental incapacity than any other single factor!

Dr. Charles Mayo, in an address in 1916, referred to the splendid work of the Chinese, of those great contributions of the Greeks, and finally came to the present decades and reminded us how one after another the great scourges, the great besoms of death, had been eradicated from the earth by medical science, and then as his climax, said the great mass of people today would not die from one of those plagues; they would die of a simple infection, that ninety out of every one hundred probably die because of some simple infection, the result of a focal infection, which focus itself would give them no trouble. He then referred to the fact that ninety per cent of the lesions of the focal infections, are above the collar, and of those above the collar would include tonsils, the antrum, the nasal passages and sinuses, that for the largest part come from oral infections.

Statistics are available which demonstrate beyond a reasonable doubt that thousands of little children are dying or are being crippled for life, suffering untold discomfort due to disease as a direct result of mouth infection. We are indeed grinding our seed corn.

Essentials to Success.

Ninety per cent of the failures in life are caused by the lack of good, hard systematic work, and yet our citizens have never waked up to the fact that health is the one prime requisite to success. Health is not a gift but an acquirement. Disease is not an accident, but the result of the violation of unchanging law, by which boundaries have been placed all about us beyond which we may not pass without paying a fearful price—a price that renders failure in life almost inevitable. Success demands strength, resourcefulness, stability, endurance—none of which are possible without health.

Robbing the Child.

The Chicago Tribune the other day had this significant editorial:

"The finance committee has reversed the order of race preservation. The law of life is that youth must be served. The old must die and the young must live. But the thrifty legislators in the city hall seem to have forgotten this unbending law; they take from the children that political jobs may endure.

"The committee has entirely abolished the appropriation for dental examinations in the schools and has reduced the appropriation for physicians and nurses. This is done in the face of a report that a large percentage of Chicago school children are victims of undernourishment and malnutrition.

"Dental examinations in the schools are necessary to the public health. So are the visits of school physicians and nurses. There are few things in the city budget that we cannot afford to sacrifice for the sake of these. The finance committee had better wake up."

This false economy being practiced in Chicago is all too common in this generation.

Is a Child's Life Worth Six Dollars?

How much does it cost to prevent deaths from diphtheria? The Ohio Public Health Journal for February gives the experience of the city of Salem, Ohio, for twenty years. During the ten years from 1890 to 1899 this town of about ten thousand, the inhabitants had one hundred and sixty-two cases of diphtheria with forty-eight deaths, or thirty per cent. In 1900 the city health authorities began furnishing free antitoxin for all cases of diphtheria. In ten years, from 1900 to 1909 there were one hundred and twenty-six cases, with only one death, a case in which antitoxin was not administered until the third day. Had the percentage of fatalities been as high during the second decade as during the first, Salem would have had thirty-seven deaths from diphtheria in that time. The free antitoxin furnished for the ten years cost the city approximately $220, or an average of $6.00 per life Any community desiring to know how much it would cost to save a child's life from diphtheria can ascertain this by multiplying the annual number of diphtheria cases by the cost of 5,000 units of antitoxin and dividing the result by the number of deaths from diphtheria each year.

It was my good fortune to hear Private Peat lecture and in reply to this question: "What was the most tender, gentle thing you ever saw a soldier do?" —He replied:

"After the first gas attack at Ypres, in April, 1915, I was knocked out for a while and was in the clearing station at Merville. One day when I was lying there on a stretcher, a poor miserable soldier came in. He was covered with mud and blood. He was minus his overcoat and his tunic was torn by shrapnel. He was soaked to the bone, for it was raining, and he was shivering with cold and pain. The nurse hurried

to him and asked him what had become of his overcoat.

"'Oh,' he said, his teeth chattering, 'my pal was killed back there, and he looked so cold, lying there in the rain, I took off my coat and put it over him.'"

If the men in the trenches, with their dirt and their filth, their swearing and fighting, can show such tenderness and unselfishness and sacrifice, are we, members of a great profession, who have it within our power to save human life, going to fall below them in nobility of spirit? I say no, a thousand times no, and while we are today being weighed in the balance, we are not going to be found wanting.

The Bible knew what it was doing when it handed down the story about Lot's wife. Anybody who looks back gets salted down, even an organization.

Dr. A. E. Winship, editor of the Journal of Education, of Boston, Mass., recently said:

"I want to be a headlight—not stand on the back platform waving a red light to keep from being run over.

"The reason why so little was created in the last hundred years," he said, "was because people were thinking of their grandfathers, not their grandchildren. If anyone had suggested squeezing sugar out of beets he would have been laughed at. They thought the only root to squeeze brains out of was a Greek root."

The Dental Profession Must Not Die On Third.

In one of the hottest baseball games of the season in the last half of the ninth inning, when the score was tied, there was a man on first, one on third, and a fairly good man at bat. The Captain of the batting team was coaching at third, and among other things he was heard to call to the runner—"Don't go to sleep."

There was just one more leg of the square for the runner to cover in order to score a winning run. The Captain was alive to the need of that runner to keep a safe distance from third and to take advantage of the least possible hitch on the part of the pitcher or catcher of the opposing team. Too many men in business or a profession make a fairly good start early in life, they get to first, and second, and if they are fortunate they get to third. But a great majority go to sleep and many die there without making the last final pull to get home—real success.

The oral hygiene problem, the player of the dental profession, has almost gone to sleep on third. Organized dentistry must inject into its very life new plans and enthusiasm, so that this great humanitarian project may score a great victory for the present and future generations. It will not pay us to go to sleep on third.

Doing Things.

The way to do things is to do them. Action is the thing. Meditation isn't a virtue to which hustlers are addicted. When a thing must be done, let's do it. Napoleon didn't win by loitering. Alexander didn't conquer the world and sigh for more territory to practice on by playing a flute in a forest. I saw a good football game last Saturday, and I noticed that the pigskin was carried toward the goal only by the team with the speed and the strength and science and endurance.

The dental profession today is at the crossroads with a tremendous responsibility resting upon it, relative to outline of definite plans for an educational propaganda, which shall have for its aim the prevention of focal infection, due to diseased mouth conditions.

In the presentation of a definite plan for the solving of the oral hygiene problem, (we are conscious of the fact that some will not understand, others who are luke-warm and thoughtless will not care, while only the few, who have the divine spark of unselfishness, will give to any plan, the cooperation and self-

sacrifice necessary to successfully discharge our professional debt to humanity.)

(Nearly every invention or educational propaganda, which has emancipated man from drudgery and given him comfort, better facilities and relieved him from suffering, was made possible only by the man or men of superior grit and persistency.)

The world owes nearly all of its great things to those who have persisted, while others have given up. Look out for a man who persists, or an organization which goes right on with its plans when the majority ridicule.

In the presentation of a definite program for the carrying on of oral hygiene work thru our National Organization, we will meet with some opposition. However, Kaufman says: "Did you ever know a batter who could outguess every ball? Do you think the greatest mountain climber never had a fall? The only man who doesn't make an error doesn't try. He clings to little certainties and lets big chances lie. A perfect score means nothing in a game without a chance; You're wasting time, where you can figure all moves in advance. If you will not take a gamble and you won't lay down a bet, there is mighty little in this world that you will ever get. The 'Safety-First' battalion is a narrow, coward crew; they aren't called upon when there's a man-sized job to do."

An American philosopher tells us that he learned in the sugar maple woods in early youth what he understood better in later years, "that the sweet things of this life do not come otherwise than drop by drop." However, we have been for years preaching line upon line, precept upon precept, here a little and there a little, and while it is true that "steady dropping will wear away a stone," I am persuaded that the time has come when the dental profession can use a sledge hammer in breaking thru the crust of ignorance, which exists relative to mouth cleanliness.

The National Dental Association cannot continue to make excuses for not taking the initiative in a definite educational propaganda. Our excuses in the past have weakened our organization. They have made us an apology for what we might have been if we had long ago had a true vision of our responsibility to ourselves and humanity, coupled with a determination to inaugurate a definite and practical educational propaganda.

Esprit De Corps.

It is a great fallacy to think of a large and successful business enterprise as being the result of individual effort. When we hear men talk of the success of a great concern we usually hear two or three men, or perhaps one man lauded to the skies, and we conclude that these few men were responsible for the success. But if we dig below the surface of things, we will find that success was the results of intelligent cooperation among all of the men and women connected with the institution. Perhaps two or three men, or even one man, was responsible for the spirit of cooperation which pervaded the organization, but it was the esprit de corps which accomplished the result. The strength of unity is indisputable; and so on the other hand, few things can do more to retard the growth and development of a dental organization than a lack of intelligent cooperation. The energy expanded in a "tug of war," if harnessed into a single team, will overcome great obstacles.

One of America's greatest painters, William M. Chase, in writing of his student experience at Munich, said: "I set to work to find out how to begin a picture, an important and neglected step; too many are hurrying on to give what is called finish before they have grounded their work in truth which must inform to uphold the entire structure."

The logical starting point of any successful undertaking is to discern a

need and then devise a way to fill it. All of the essayists who have discussed this problem during this meeting and all of those men who have, during the last few years, become thoroly familiar with it, are satisfied that we have a clear understanding of the needs of the laity and the responsibility of the profession.

Mouth Hygiene Essentially an Educational Problem.

I am sure we will all corroborate the following statement made by Doctor Alfred C. Fones (July Cosmos, 1919) in summing up his report of Five Years of Mouth Hygiene in the public schools of Bridgeport, Conn.:

"This demonstration has provided sufficient data to convince us that every community, sooner or later, must adopt some plan, preferably one of prevention, to establish clean mouths and sound teeth for school children.

"We know of no one movement, from the health standpoint, that would be more beneficial to the nation at large than a serious educational campaign to eliminate dental caries as far as would be possible. There is so much in this work that cannot be measured in figures—especially the moral uplift which comes to the individual when he is taught the importance of cleanliness and a wholesome respect for his body.

"(The prevention of diseases such as syphilis, tuberculosis, dental caries, etc., will not come thru any specific form of medication or treatment, but chiefly thru education and enlightenment.) Books, pamphlets, articles in magazines and newspapers, all are of great value in disseminating knowledge, but for actual tangible results in eventually reaching all members of a community, nothing will compare with thoroly spreading such knowledge among the children in our public school system."

To my mind the mouth hygiene problem is primarily a problem of education.

We must inagurate a vigorous educational campaign among the laity following similar plans used by the National Tuberculosis Association, and other public health organizations. This educational propaganda should be instituted under the guidance and control of the National Dental Association.

The Scope of Publicity.

Edward Moree says, in February, 1916, American Journal of Public Health, "Publicity properly applied will save more lives than any other single agency employed by health workers. It should be entered in the Public Health Pharmacopoeia as an accredited remedy for human ills. It is being applied to individuals in capsule doses of public education. It is also being applied to masses of people over whole areas of country as public health agitation for far-reaching reforms and for needed new health laws or regulations and for the enforcement of laws on the books.

"Publicity prevents tuberculosis and dental diseases and builds hospitals and infirmaries to cure them. It saves the lives of children and adults and controls epidemics of smallpox. Thousands of babies are today alive in the United States, largely because big doses of publicity were administered to the public by health propaganda, thru exhibits, newspaper articles and lectures. One of the most important cities of that state endured an epidemic of smallpox that increased for a year or more. Then the State Department of Health announced that its policy in dealing with epidemics would be state-wide publicity. When the people of that city realized that their low health standards were to be advertised broadcast thru the pages of newspapers and would come to the knowledge of the people of the whole state whose lives were being menaced, the city officials soon found merit in the program of the state."

A Study of Some Publicity Plans Which Have Been Inaugurated.

I realize that time will not permit me to discuss, to any great extent, the large

number of public educational campaigns, which were carried on during the war. However, I do want to study briefly some of these that we may be impressed with the importance of publicity and the methods used by other organizations and the government.

It was my good fortune on the 21st of September to attend the Convention of the Association of Advertising Clubs of the World held in New Orleans, La.

Dr. A. B. Dinwiddie, president of Tulane University, referred in his speech of welcome of the relation of education to publicity and their gradual drawing together for the enlightenment of the people on the basis of Truth and Sincerity, and their present opportunity to reestablish our social and industrial relations upon principles of fairness and equity.

How Publicity Can Improve Industrial Morale.

The American propaganda in the war and American leaflets and other matter were as bitterly honest as the bayonets. They won over the enemies' underhanded methods because they told the truth in publicity. A typical American plan when they needed German deserters for information and the Germans had said that German prisoners were killed by Americans was this: They actually reprinted the American mess menu and shot it across, saying: "These rations are given to prisoners." And they could check results on this publicity because many prisoners when they walked over to surrender actually asked for the food as advertised!

Samuel Gompers, President, American Federation of Labor, endorses publicity when he says:

"Advertising Necessary to Enterprise."

"No idea, no principle, no commodity can serve its purpose until it finds its place in service."

I was very much impressed with the following statement made by C. F. Higham, of London, England, on Publicity:

"When nations in the past have set up national ideals there has been little result for at least a generation, because the teaching was only given thru the churches, schools and universities. But if we set up a national ideal today and deliberately, continuously and publicly promoted it in the advertising columns of the newspapers, on the boarding, and thru the moving pictures, a very quick difference could be made in the tone and temper of the whole community. In my opinion, this is the most astounding thought of modern times. We can create a new outlook; we can vivify thought; we can move human energy in any direction by organized and public persuasion.

"What we want is mass education—one stupendous piece of propaganda to teach a fundamental and therefore non-sectarian principle of living—which, when assimilated, would automatically dispel half our problems and make the way easy for the solution of the rest.

"We can 'change the whole face of existence,' as Mr. Lloyd George has said; but only if we organize the imagination of the national, and concentrate public opinion on some principle which touches our emotion, and so gives our work, from statesmanship to crossing sweeping, a new and collective aim."

I am sure that every man here is acquainted with the publicity work done by the government thru patriotic posters to speed up production in government ship yards, the securing of recruits for the Army and Navy, War Saving Stamps, Bond Issues, etc.

"Education In Thrift."

Even the progressive banks of the country are appropriating large sums of money for publicity work in helping banks to educate the masses.

Even Lawrence, Mass., is advertising Citizenship to Unabsorbed Aliens, and will attempt to sell American ideals and

American institutions to all persons in the city, and, at the same time will work to better conditions so that things that are admittedly bad will be wiped out.

There has never been an article made in the world where the general public made a demand in advance of the manufacturing of the article, but when an article has been made and offered to the public, and it was of merit, there has never been a time when the public did not respond by demanding the article.

What is true relative to merchandise is equally true to matters pertaining to health efficiency.

PUBLICITY PROPAGANDA INAUGURATED BY THE AMERICAN MEDICAL ASSOCIATION.

A few days ago I had the opportunity and pleasure of interviewing Dr. Frederick R. Green, Secretary of the Council of Health and Public Instruction of the American Medical Association. From Dr. Green I secured detailed information relative to the plans of the American Medical Association in its publicity campaign, for Dr. Green said that in the session of 1912 his council reported that a Press Bureau had been organized and conducted during the year, by which regular press bulletins had been sent to approximately 5,000 daily newspapers each week, the Speakers' Bureau had been organized and in the three months of its existence had supplied speakers for forty-four meetings; nine pamphlets on various public health subjects had been prepared, printed and distributed; a Handbook for Speakers on Public Health had been compiled, printed and distributed to the speakers of the bureau.

In 1913, the council reported the continuation of these activities, showing that speakers had been furnished for 213 meetings during the year; that fourteen pamphlets had been prepared and distributed and that the various sub-committees of the council had been functioning successfully during the year.

In 1914, after four years of existence, the council presented to the House of Delegates a definite program, in which it endeavored to formulate the duties and activities of the organized medical profession in the public health field. In outlining such a program, the council assumed that the primary object of its existence was to place before the profession and the public of the United States the objects, purposes and work of the organized medical profession as represented by the American Medical Association and its constituent state and component county societies, so as to secure public support and endorsement of its efforts for the improvement of public health conditions in the United States. Three general lines of action were accordingly recommended. These were:

1. A thoro investigation of present public health conditions in the United States with the view to securing more accurate information on all phases of the public health problem than is now available.

2. Education of the public by every possible means in order that the people may understand the enormous advances in scientific medical knowledge during the last generation and the possibilities of utilizing such knowledge in the prevention of disease, the reduction of the death rate and the prolongation of human life.

3. The crystallizing of such educated sentiment in necessary public health laws which will render possible the conservation of human life commensurate with our advancing knowledge and will render such laws effective thru the only force available in this country, namely, educated and enlightened public opinion.

Under the first head, namely, the investigation of the present public health situation, need for additional knowledge was subdivided into four classes, namely: (a) public health activities of the federal government; (b) state public health activities; (c) municipal health

organization; (d) voluntary public health organization.

Under the second head, the education of the public, the council reported the continuation of the Press Bureau, forty-two bulletins having been sent to 4,900 newspapers. The Speakers' Bureau had been maintained during the year, speakers had been furnished for 133 meetings, and a standard set of public health pamphlets had been prepared and published for the use of state boards.

An open letter to the American Medical Association appeared in Printers' Ink of August 1, 1919. This letter severely criticized the medical profession for not doing more publicity work along health lines.

Dr. Arthur J. Cramp made a reply in behalf of the American Medical Association, from which I quote the following:

"Is there any good reason why the medical profession as a whole should not tell the people of the country as a whole how tuberculosis develops and how it can be avoided by proper food and plenty of fresh air?" No. And, as a matter of fact, the Council of Health and Public Instruction has for years been doing this very thing. In cooperation with the National Tuberculosis Association, the American Medical Association has printed hundreds of thousands of pamphlets written in everyday English and dealing with the very points suggested by him. That other great scourge, cancer, has also been dealt with in a series of inexpensive pamphlets. Of still another series on the conservation of vision, comprising twenty pamphlets and dealing with such subjects as "School Children's Eyes," "Wearing Glasses," "Eye Strain," "Care of the Eyes," etc., nearly two and one-half million have gone to the public. Nor has the care of the baby been neglected. The "Baby Welfare Pamphlets" give directions for mothers, telling them what to do before the baby comes and how to care for it after it arrives. Over a million of these have been put into the hands of those directly interested. A standard score card for public health conferences also has been prepared and more than half a million of these have gone out. In addition to these pamphlets, the Council on Health and Public Instruction has prepared educational posters and cartoons on various phases of public health questions and they are so designed as to appeal to the public.

To abolish as patients those who read themselves "sick" from the lurid symptom lists of the "patent medicine" advertisements, The Journal of the American Medical Association, has thru its Propaganda for Reform Department, been giving the public the facts relative to the "patent medicine" evil and quackery for over a decade. Over a million pamphlets and books dealing with the nostrum evil and quackery have been put in the hands of the public and the Association has spent hundreds of thousands of dollars in maintaining the organization necessary to prepare this educational work.

Thousands of individual letters from laymen and physicians on the subject are answered yearly and without cost; educational placards on the same subject have been prepared and are being used by various organizations interested in the public health, not only thruout the United States, but in various parts of the world; illustrated public lectures have been given on the same subject; lantern slides have been made so that stereopticon lectures can be delivered; information is furnished free to advertising clubs, newspapers and magazines; large business organizations which look after the health and safety of their employees call on the Propaganda Department for the material it has for educational purposes.

That the plan suggested in the "open letter" of conducting an educational campaign thru newspaper advertisements might be of great value is readily admit-

ted. Whether it would be more or less wasteful than the means now employed could be determined only by trial.

Advertising Helped Win the War for the Allies.

This is a publicity age, for we advertised men into the army. We advertised the money to clothe them and train them, and to feed them and to send them overseas. We advertised men into the ship yards. We advertised raw materials into the foundries; then out of the foundries and into the finished products, and then into the ship yards where they might be constructed into giant transports. We advertised a veritable host of Hun-killing airplanes into service. We advertised five gigantic Liberty loans into successful being, and—better than all, we advertised by means of fliers and pamphlets and other propaganda dropped over into the enemy's line from our Allied airplanes a true viewpoint upon the situation. History which will be studied by your grandchildren and mine, will note this period thru which we are now passing as being a publicity epoch. Big business has come to recognize advertising as a fundamental success and even the medical profession thru its national organization has approved health publicity.

A Practical Way to Interest People in Mouth Hygiene.

This would seem to be an opportune time to educate people in the principles of the mouth hygiene.

The war has not only brought about a great popular interest in all matters of health, but it is now realized better than ever before that the teeth of our people are not what they should be.

Any broad campaign of propaganda or popular education calls for careful preliminary study and progressive development after the first start is made.

Without attempting to discuss the various details of such a campaign of popular education, we venture to set forth a plan which can be put in operation without delay, which does not call for a large money outlay, which will bring immediate results and which will serve as a basis for further development.

The cost will be moderate, and altho an attempt would be made to cover the whole country, the machinery and theory of the idea is so simple that success is reasonably assured.

Something About the Plan.

The quickest and most expedient plan of campaign would be thru the news columns of the daily press, and the work thereupon directed thru these channels.

At this point the question will be raised, how can you get into the news columns of the daily newspapers. Is it necessary to pay money for this privilege or to practice deception?

The answer is:

1. The American newspaper editor is always ready to accept paragraphs of legitimate news interests to the people.

2. The American people are always interested in any subject that relates to their health and well-being. They, of course, have other catagories of interest, but the question of health is usually uppermost.

3. Dentistry and Oral Hygiene are very definitely related to the public's health and well-being.

The problem then is to set about the preparation and distribution of paragraphs and news articles based upon the subject of Oral Hygiene, and to do this in a way that will appeal to the editorial judgment, so that this material is accepted for publication in the news columns of the daily press.

Can this be done? The answer is that it is being done every day for business and other organizations.

Indeed this has been the specialized work for years of a few legitimate organizations. This work is based upon the fact that there is legitimate news material in most forms of organized

human activity, and that a writing organization, properly trained and experienced, if given time and incentive, can uncover this news and present it in the form required for the necessary publication in the news columns.

All of this is sound and fully proved, and in the case of one organization located in New York and Chicago—has been demonstrated in a number of professional and industrial organizations.

Is This the Best Plan?

There are many ways of reaching and influencing the people. In addition to the newspaper it can be accomplished by such varying methods as public addresses, printed material sent directly thru the mails, moving pictures, governmental agencies, schools and colleges, etc.

Perhaps no agency is so quickly responsive, so universal in its appeal, and so truly influential as the press. Thru its columns everyone receives information that shapes and directs his actions. Clearly the newspaper comes first.

Some Determining Factors.

The success of such a plan depends strictly upon obtaining the assistance of some organization which is capable of preparing newspaper material.

Altho many dentists, newspaper writers and others have attempted to do the work outlined above, there have been numerous failures, in fact the successful organizations are few. No organization, however effective it may be, can achieve full success unless it has the sympathetic cooperation of its clients and the willingness of all concerned to see the undertaking thru. Time and perseverence count here as in other human undertakings.

Quick and flashy work will never achieve permanent results. For the work to win, there must be sustained effort, excellence of output, the entire work directed by sound thinking, and inspired with a real belief in the righteousness of the cause.

Grover Cleveland once evolved a phrase, which I do not want applied to this paper: *"Glittering Generalities."* Therefore in offering a solution of the Oral Hygiene Problem, we desire to be very specific, and in concluding would summarize as follows:

I. Educating the dentist to his responsibility and duty.

II. The gradual increase in the number of dentists and the raising of the standard of dental services.

III. The securing of legislation in every state in the union legalizing dental hygiene.

IV. The enactment of the state legislation which will make dental service an integral part of the public health activities of each state, under the administration of dentally educated executive officers.

V. The introduction into the public school curricula of obligatory education in oral hygiene.

VI. The systematic oral inspection of school children and treatment of their dental defects by dentists.

VII. The National Dental Association creating a standing committee on Mouth Hygiene and Public Instruction.

The work of the Standing Committee on Mouth Hygiene and Public Instruction should embrace all subjects pertaining to educational work. It should be a sort of a clearing house thru which all public health organizations, societies, State oral hygiene committees, the profession and individuals could cooperate and receive assistance.

A brief memorandum of the duties of this committee may not be amiss.

How? Thru National Office as Follows:

1. Publicity Bureau.
2. Correspondence Bureau.
3. Speakers Bureau—Four Minute Men.

4. Mass Meeting.
5. Report of work checked up.
   (a) By tabulated reports.
6. Reprints.
   (a) Small leaflets for distribution to school children.
   (b) Reprint for others in text, etc., prepared for this school purpose.
   (c) Reprint—For those who desire more complete information and statistics—better bound, etc.
   (d) Reprint for Educators.
   (e) Reprints for the Profession standardizing brushing, brush, etc., under auspices of National Dental Association.
   (f) Reprint for Profession, giving outline of lectures, etc.
7. Education by
   (a) Motion Picture Reels.
   (b) Slides for variety lectures.
   (c) School Text Books—Chapters on mouth hygiene.
8. Publicity—thru the press, etc.

How Finance?

1. Thru appropriations from National Dental Association Treasurer.
2. Donations from State Societies.
3. Donations from others interested in success of dentistry.
4. Philanthropic.

Philip Brooks tells us of a traveler, who is going thru a country by a long straight road which leads at last to a great city which is his final goal. At the very beginning of the journey the road leads over a high hill. Upon the summit of that hill the traveler can clearly see the spires of the far-away city flashing in the sun. He feasts his eyes on it. And then he follows the road down into the valley. It plunges into forests. It sounds the depths in which flow the dark waters which the sun never touches. But yet he never forgets the vision which he saw from the hilltop.

The dental profession is on the hilltop at the very forks of the road in its opportunity for leadership and duty in this great humanitarian health problem. We cannot, we must not and will not turn back, but with a grim determination we will organize our forces and follow the beacon path, discharging our duty to this and the coming generations.

J. H. Grant, Salt Lake City: It seems to me that this problem is a new one, and if there is any one thing that the dental profession should unite upon, it is following along this line of propaganda in order to get the people to understand it. I want to say that no great problem was ever solved without the understanding of the common people, and the only way in the world that we will ever get anywhere with this great hygiene movement will be by the educating of the people to understand the problem, and getting them to talk about it. This is the time to make our moves, and lay our plans in such a way, that an impetus will be given to this thing that will be so far-reaching that we shall feel we have in the people enthusiastic workers for the advance of this great movement. (Applause.)

Dr. Hyatt, New York City: I am delighted that Dr. King brought out the necessity of educating the dentist. (Applause). If only the rank and file of the members of this Association realized the importance and necessity of the Oral Hygiene Campaign, there would be no difficulty in securing dental attention for every school child in the United States.

The next great step in preventive medicine, is preventive dentistry, and the only logical place to start it, is in the schools.

We do not need new data on this subject. If we have such a committee as Dr. King suggests, this committee can serve as the clearing house for the data already secured.

I know of no service that is of greater value, or has greater opportunities to

improve the health of mankind than that which our profession can offer. As soon as the majority of our members feel as we do, and are willing to do their share of the work, it will not be difficult to secure the cooperation of Cities, States, and our Government in carrying on this work. You cannot expect government officials to aid us in this campaign while the majority of our profession is indifferent to it.

I move that a committee from this section make a report to the House of Delegates and impress upon those gentlemen that there is nothing in this whole convention so important as a real live nation-wide campaign for the education of the dentist and the public to the value of Mouth Hygiene. (Applause).

Dr. Burk, Detroit, Mich.: The Secretary has been kind enough to come before this section and offer us a very instructive program for the furtherance of this propaganda, and I take pleasure in seconding the motion that the well-organized plan may be formed so that this work can be successfully carried on.

M. D. K. Bremner, Chicago: After all, mouth hygiene has a very strong case in economics. I think there has been nothing given us in the recent years better than the example of Dr. Fones who started the work of oral hygiene in Bridgeport, Conn., five years ago, and how, after five years, he was able to report a reduction in the cost of re-education of almost fifty per cent. If we can by cleaning up the mouth reduce the expense of running our schools, and we give the boards actual figures, I think they too will become enthusiastic. It seems to me one of the first things that the Mouth Hygiene Committee can and should do, is to place a copy of that report into the hands of every school superintendent, every board of education, and every taxing body in the United States and let them see that it is an actual money making proposition. I assure you, it will not be possible to get our legislatures to do anything unless we can convince them it is going to be a practical proposition from the viewpoint of dollars and cents.

E. L. Pettibone, Cleveland: It has been my privilege to talk to over fifty thousand people on Mouth hygiene at churches, schools, mothers' clubs, assemblies and Y. M. C. A., Y. W. C. A., and dental societies and I received the least appreciation from the Dental Associations. Let the education begin within, and let the education be perfected within before we extend too far without. The demand for information on oral hygiene is really wide, I believe. For instance, as secretary of the National Association of Industrial Dental Surgeons, I have been hounded for information, and we have been asked to prepare bulletins on teeth for the National Safety Council. This our members have done and this work on mouth hygiene has gone into the shops of 17,000 firms employing two million men. There are 72 firms in the United States having from one to fourteen dental dispensaries and all of them make the educational feature the most important work of the dentist in charge. Some of them call it welfare work, but the ones that have been at it long enough and the ones that acknowledge what the work is, call it efficiency work. You know if you have toothache—and I know lots of dentists that have it,—that you cannot work satisfactorily. You have to begin the education on the inside. The dentists, I believe, as a class, are the least responsive to this work. Many dentists work for so many old women that they become old women. They don't like to progress, and get out and do their share; but it is being forced upon us. We have to tell the people about preventive medicine, the dental part of preventive medicine, and I hope we can get an organization to get the dentists to realize what they owe to their communities, to help the people realize

the important mission that they have in the prevention of disease, and I hope this organization will go forward. We, in Ohio, will help you in any way, and not only give you any information we have but try to help you to avoid our mistakes.

Dr. Millikin, California: I did not hear Dr. King's paper, but I would like to bring out a point from the California standpoint, and that is the education of the dentists, because we are getting a little ahead of the dentists, and I would like to say in California we have an educational campaign on, which Dr. Millberry outlined, as to who is educating the people and how they are being educated. I would like to show some of the advertisements that are being put out. We had a bill before the legislature of California to provide for dental hygienists, but it never became a law.

E. L. Pettibone: It is estimated that it costs fifty dollars to take a man off a job. If he comes in, and the place is insanitary, the light is bad, and he gets the toothache and has to go to a dentist the firm loses $50. If the man does it or a girl does it, they go to get the tooth fixed in the morning, and go to a show in the afternoon, with the result that the firm is the loser. In any place where a girl is working, and she has a sick headache after going out to a lunch of ice cream or candy, and has to go home and probably does not show up the next day, it costs her employer a great deal. If there is a clinic, and the girl goes down to this department with a headache or tooth that bothers her, they can get her back in an hour or two. The dental clinic is one of the big factors. I know where they have 700 employes in one factory, there would be 70 or 80 people going out in one day. They put in dental inspection and various things, and now they have been able to allow a half day off on account of the improved attendance. (Applause).

Dr. King (closing): The organized dental profession must inaugurate a systematic campaign of educating the individual dentist to his responsibility in connection with this greath Mouth Hygiene problem. Too many dentists have never realized that the dental profession has a definite message to give to humanity—we have it within our power to save human life and prolong the average life of man. I know that the educators of our country are wondering why the dental profession has been so derelict in measuring up to its opportunity in discharging its obligation to the laity. However, the leaders in the dental profession today have determined that we can no longer shift our responsibility and, therefore, we have perfected the plans as outlined in this paper today to begin a systematic campaign of education. However, in justice to our own organization, we must not overlook the fact that we have never been in a financial position where we could undertake an educational campaign such as outlined in the paper.

We have, at the present time, about 3,000 slides so that in the near future we will have a sufficient number of duplicated sets for lectures on various subjects. These slides and lectures may be secured thru our National Dental Association office, in Chicago.

We must make out of our National Dental Association a clearing house thru which all educational propaganda on the great Mouth Hygiene problem should be carried on. Let us coordinate all of the work of the various organizations thru our National organization.

A REVIEW OF DENTAL LITERATURE.

APRIL, 1919, TO APRIL, 1920.

By Russell W. Bunting, D. D. Sc., Ann Arbor, Mich.

(Read before the Michigan Dental State Society, April 13th, 1920.)

THE past year has been for Dentistry a year of introspection. The voices of her leaders as expressed in the publications of the year have not rung out with a clear strong note of positive conviction but rather have their expressions betrayed uncertainty and doubt. The great problems of oral infection and its relation to the health of the body have attained such prominence that they have overshadowed and dominated all other considerations in dental practice, and in the literature we see the strongest evidence that the dental profession is assiduously striving to learn what is the truth and to so order her procedures that they will be in conformity with the truth.

But the problem has proven to be so complex that so far its solution has baffled the keenest minds and no definitely positive course of action has been presented which can be adopted universally. In the writings upon this subject which have been voluminous (indeed no issue of a journal is complete without one or more contributions) there is an almost unanimous agreement as to the grave significance of peridental infections to the general health, and among the various types of oral infection the greatest stress is laid upon the pulpless tooth and periapical invasions. The great prevalence of periapical disturbances about non-vital teeth has focussed the discussion upon the question as to whether a devitalized tooth may under any conditions be considered free from infection and safe to be retained in the mouth.

Among the medical and dental writers who have discussed this question, we see that there are three distinct classes, one the empiracists who say that no dead tooth is ever safe and stand unequivocally and unvaryingly for 100% vitality; second, the scoffers who doubt the significance of these periapical infections and their ability to disturb the general health; and third, those who are conscientiously studying all phases of the subject but who are attempting to keep to the middle of the road and arrive at a sane, conservative, rational policy that will successfully meet the situation. In certain sections of the country the empiracists have predominated and wherever their teachings have prevailed, the pendulum of opinion has swung so far away from the old established methods of practice that thousands of teeth have been extracted and hundreds of patients have been made edentulous. As a conspicuous example of these the writings of Novitzky (1) may be cited in which it is claimed by the writer that every devitalized tooth is infected six months after the root-canals have been treated and filled and he denies the efficacy of any method of procedure to keep them sterile for more than that length of time. He, therefore, concludes that the retention of non-vital teeth is unsafe. These opinions have been widely quoted in the lay press as well as the professional journals.

On the other hand, there have appeared a number of statements by able members of both medical and dental professions in which it is claimed that sufficient evidence has not yet been advanced to warrant the wholesale extraction of all devitalized teeth and the attitude of empiracism, which has become so prevalent, is strongly condemned. Hartzell (2) shows by statistics gathered from various sources that streptococcal diseases are a serious menace to human life and that the great majority gain entrance to the body thru the oral tissues. But he states "The individuals who advocate complete destruction of dental organs, in order to rid the body of streptococcal growth, evidence profound ignorance. Wholesale extraction of the teeth will not rid the body of streptococcal growth. One might as well advise removal of the transverse colon to rid the body of colon bacillus. A much more sane method of cutting down the inroads of mouth infection is that of a vigorous systematic mouth sanitation together with the adoption of a diet planned to prevent intestinal putrefaction.—Where teeth must be devitalized, such devitalization should be done under exactly the same kind of surgical asepsis, as is demanded of surgery of the brain or abdominal cavity." He believes that the decision as to the removal of teeth should always depend upon an examination of the patient's vital resistance. "A clinical picture, which would demand extraction might be as follows: Early history of tooth and tonsil infection, swollen glands, draining the mouth and throat area, poverty of red cells, reduced hemoglobin, and a markedly increased or decreased leucocyte count." In cases in which the patient's resistance is high he would treat periapical and peridental infections but when the resistance is found to be low he would extract the teeth, taking but a few at a time to reduce the anaphylactic shock.

E. C. Rosenow (3) in a contribution to elective localization with special reference to oral sepsis gives further proof of the validity of his claims as to the specificity of oral focal infections in their ability to produce systemic lesions. He states that in the clearing up of such infections the simple extraction of teeth is not sufficient but rather that they should be removed surgically in order that all dead spaces in the bone might be eliminated at the same time. But he says "If a person is perfectly well, has harbored for some years one or more devitalized teeth in which the X-ray findings are negative, there would seem to be no good reason for extraction. If, on the other hand, the person is suffering from arthritis, a heart or kidney affection, or some other form of disease for which other cause cannot be found such teeth should be removed. Owing to the reparative power of the cementum it would seem possible to devitalize teeth safely whose pulps are sterile and whose canals may be properly filled providing that the operation is done in an aseptic manner. This should be done after the removal of other sources of infection and only in teeth of vital importance for restorative needs.

"In case of beginning infection of the pulp from decay, which has not extended into the periapical tissues, attempts at sterilization, and, if necessary, removal of the pulp and filling the canal may be justified in some instances, but not until cultures have proved that the tissues are free from living bacteria, and only if the responsibility is shared conjointly by the patient and operator."

In a symposium (4) of discussion directed toward the status of pulpless teeth which was held on the Pacific coast, W. C. Alvarez, a medical man, made a strong protest against the reckless extraction of teeth. He described the deplorable condition of mouths of patients whose teeth had been ordered out by physicians who, "quite oblivious to any possible value of the teeth to their

owner, must have ordered their extraction simply because he believed it a panacea for most diseases. I believe that we have lost our heads over this thing and that the time has come to call a halt. Men have obtained such beautiful results in some cases by extracting teeth that some of them are now trying to explain most diseases on the basis of these focal infections. In practice they pull the teeth first and if the patient returns unbenefited they can then look to see what is the matter with him." He also speaks of those people who were "cured" by radical methods but who after a period of relief, are again going the rounds of doctors' offices.

He says further: "Many of the dentists have become so frightened over the terrible results which they think must follow every root infection that they are refusing to fill any root-canals at all. They feel that the risk to life and health is so great that a man should immediately sacrifice every dead tooth in his head. Certainly the thousands of people who, for the last thirty or forty years, have been chewing contentedly on dead teeth (without signs of root infection) should be grateful that these radical ideas did not prevail when they were young." He concludes with the statement that "In view of the fact that most thoro removal of focal infections often fails to cure arthritis and other diseases, let us be more honest and conservative with our patients. Let us be careful what we promise them. Let us save serviceable teeth wherever possible. Above all let us do unto our patients only what we would have done unto ourselves if their teeth were in our heads."

Guy S. Millberry in closing this symposium says: "Let us choose the middle of the road in this problem and assist nature first by endeavoring to prevent dental disease and second by conserving and restoring to health those very valuable organs intrusted to our care, the human teeth." He also quotes A. D. Black as saying: "I have a dead central incisor and a dead lateral incisor I have carried for thirty years and I hope to carry them as long as I live for I have not been confined in bed for twenty-four consecutive hours in any one day since I was four years old."

C. N. Johnson (5) from his broad clinical experience and observation extending back over fifty years condemns the modern empirical attitude toward pulpless teeth. He says: "It would seem as if more than half a century of constant experience and observation on the part of the dental profession were to be cavalierly swept aside by a wave or two of the hand, and that the dicta of certain members of the medical profession followed by those of certain members of the dental profession were to override all the clinical experience obtained since pulpless teeth began to be filled. The impression has gone out from some quarters that the moment a tooth has lost its pulp it becomes a menace to the physical wellbeing of the individual, and should, therefore, not be tolerated in the mouth. This is so at variance with the clinical history of countless numbers of pulpless teeth that it cannot be permitted to go unchallenged. Pulpless teeth have been of such incalculable service to people * * that it will not do to sacrifice them on mere assertion. There has been altogether too much *ex parte* evidence on this subject, too much theorizing, too much panicky reasoning from illogical premises, too much reliance on laboratory experiments alone without studying sufficiently the things which actually happen in the mouth. This much is true, that if all the pulpless teeth of the past had been sacrificed, very many individuals who have enjoyed the blessings of adequate mastication would have been sadly crippled with all the consequent ills which follow a failure to properly perform this function.

E. C. Kells (6) in a paper entitled "The Crime of the Age" calls attention

to the manifest errors in diagnosis and wholesale sacrifice of teeth based on radiographic evidence alone. He shows the limitations of the roentgenogram and condemns the diagnosis of peridental disease by the physician and roentgenologist. He also says "That a dead tooth must necessarily be infected is the wildest of errors. That an infected root cannot be rendered sterile is just as fallacious. Abscessed teeth, the roots of which were filled more than twenty-five years ago, that show apparently normal conditions in the skiagraph today, and the patients in perfect health, are clinical evidences of this fact which cannot be controverted."

Don M. Graham has contributed (7) (8) two papers to this subject, in which he pleads for a middle course in the handling of pulpless teeth. He says, "let us not be swayed by the fads and fancies of the few who are ever 'chasing the will-o'-the wisp' of a single origin for all ills. * * * * * The tendency to ascribe a single cause to most diseases may prove an easy method of diagnosis but the attempt to make the teeth, the tonsil or the appendix the scapegoat for general ill health we are quite sure will never be borne out by science." He calls attention to the many other sources of infection which may be militating against the patient's health, all of which should be taken into account when considering the significance of dental foci. He also says, "This inability to fill canals with uniform success has raised the question as to whether such operations should ever be attempted. The answer to this query, today, is that with sufficient time, equipment, and patience it is believed that the majority of single rooted teeth at least, can be filled safely if not completely, hoping that Nature can be depended upon to take care of a good deal damage inflicted upon her."

C. K. Mills, M. D. (9) delivered a very pointed paper relating to this subject before the Philadelphia County Medical Society, Pennsylvania. He called attention to the activities of the lay press in bringing information regarding dental focal infection before the public and the possible errors that may arise therefrom. He says "I have but little doubt but that literally bushels of teeth of excellent quality have been sacrificed as the result of this atrocious article about Colonel Roosevelt. * * * * A score or more of cases have come to my knowledge in which important mental and nervous diseases have been attributed to dental infection, and in which the teeth had been removed with results in some instances so harmful as to make me feel that the procedure was almost a criminal one." He further speaks of the other fads in mecidine such as the wholesale removal of colons of epileptics, appendices, tonsils and ovaries and in conclusion says, "I protest against the too free use of the therapeutics of organic mutilation. If the craze for violent removal goes on, it will come to pass that we shall have a gutless, glandless, toothless, and perhaps, thanks to psychology and surgery, a witless race."

Thus we see that the pendulum of opinion regarding peridental infections and pulpless teeth is beginning to swing back from the position of radical empiricism toward a sane and sensible view of the situation based upon established scientific data and clinical observations. True it is that when the pendulum comes to rest it will not be at the point at which it remained so long prior to five years ago, but it is also true that it cannot remain at that extremely radical position which some of our enthusiastic friends would have us believe.

A number of commendable articles relating to the handling of root-canals have appeared in which no particularly new methods have been suggested but all accentuate the need of the highest technical skill in performing such operations. Many use the same methods of preparation of patient and aseptic technic as are

employed by the surgeon in a major operation, while others who may not be quite as drastic lay the greatest stress on the necessity of complete sterility of all instruments and the avoidance of introducing infectious materials into the canal or periapical tissues. Coolidge (10) describes his method of handling diseased and infected pulps. He quotes the statement of A. D. Black that in the radiograms of over 1500 root-canal fillings only 9% of the well-filled canals showed periapical abscesses while of the poorly filled there were 63%. The writer believes that if these good root fillings could be made aseptically the problem of devitalized teeth would be solved by reducing the 10% of failures to zero or 100% success. Coolidge uses dichloramine-T as a sterilizing agent and does not fill an infected canal under treatment until a dry dressing sealed in the canal for 24 to 48 hours is found to be sterile when examined in smear and planted in a culture medium. He believes that it is impossible to completely sterilize the dentin of an infected tooth but that it is possible to sterilize the walls of the canal and to hermetically seal the canal to prevent reinfection. In filling the canal he uses gutta-percha which he attempts to carry completely to the apical end and seal it.

A. B. Crane (11) in an unfinished article gives a detailed description of an aseptic technic of root-canal surgery. He treats of diagnosis, methods of operating, types of equipment and pleads for aseptic methods checked by cultural tests for bacteria. H. Prinz (12) asks the question, "What Constitutes Reinfection of Root-canals and How Can It Be Avoided?" He calls attention to the rapidity with which a sterilized canal again becomes reinfected and states that "An incipiently infected root-canal cannot be sterilized permanently by the antiseptic method of treatment now in vogue." To prevent the reinfection of the canals by organisms which have not been reached by the antiseptics and germicides he says "The complete corking up of every tubule and every accessible foramen is the final desideratum we must strive for in the permanent filling of a root-canal. We thereby deposit, as it were, an antiseptic which mechanically inhibits the confined infective organisms and prevents renewal of their growth." Prinz further states "The time is not far distant when the public will demand a laboratory diagnosis of serious root-canal infections for the same reason that a bacteriologic examination of a diphtheretic throat is demanded at present. Since the sequences of imperfect root-canal sterilization in the form of focal infections resulting in metastatic disturbances of distant organs are of common occurrence, it must follow that our present methods of establishing the perfect sterility of an infected root-canal are inadequate." He, like Coolidge, uses dichloramine-T as an antiseptic and fills the canal with rosin and gutta-percha.

U. G. Rickert (13) calls attention to the uses and advantages of silver depositions in root-canal procedures, a method which was ignored by both previous writers. He gives a modification of the Howe technic by which he has eliminated the irritating qualities which the original method so commonly produced. S. E. Pond (14) of the Research Institute has published a series of tests on the efficiency of methods used in the sterilization of dental instruments and root filling materials. The data that is set forth in this paper is a valuable guide to practitioners who, by comparison, may check up the efficiency of their own particular method of sterilization and determine whether or not it is adequate.

Carl J. Grove (15) calls attention to the grave significance of injury to the periapical tissues by chemicals or traumatic force during pulp-canal operations. He believes that grave injury is being done to these tissues by operators

who attempt to completely cleanse and fill the canals, and doubts if a perfect root filling can ever be made by the human hand without doing serious injury to the tissues about the apex. He claims that out of 1000 radiograms of teeth with root-canal fillings a greater percentage of those that were filled to the end showed infections about than did those which were not completely filled. He shows a number of microphotographs of periapical tissues taken from cases which are in health and from those which have been injured by various forms of chemicals in root-canal procedures. These cuts are worthy of careful study by every practitioner.

H. Prinz (16) has written another comprehensive treatise on the diseases of the dental pulp, their diagnosis and treatment, which is now running serially in the Dental Cosmos. Vida Latham (17) has reviewed the minute histological structure of the root and its canals showing the nature of the structures involved in the root-canal problem. The paper is illustrated with a profusion of cuts which are very instructive.

A more comprehensive study of the histopathology of the tooth and surrounding structures by Eugene Talbot (18) is now appearing serially in the Dental Cosmos. He considers in detail the various pathological changes which occur in the root of the tooth, the pericementum and surrounding alveolar bone.

Perhaps the most striking announcement of the year is that of Henrici and Hartzell (19) who have found living bacteria in a large number of living tooth pulps. In an examination of a quantity of extracted teeth they sterilized the outer surfaces of the teeth, cracked them open and tested the pulp for bacteria. In no case could they find bacteria in the pulps of teeth which were fully normal, i. e., unaffected by caries or pyorrhea. But in those teeth which were affected by caries, pyorrhea, or both, 42% to 46% of the pulps were infected, the most common organism being streptococcus viridans. In regard to their startling claims they say: "If our observations are correct, we must conclude that, in approximately one-half the number of vital teeth invaded by caries or surrounded by pyorrhea, the pulp is already infected by streptococci, a conclusion so startling that we felt some hesitation about placing our work on record at this time. Nevertheless we can find no fault in our technic supported as it is by a series of 22 normal controls with uniformly negative results." These findings are indeed startling and they by all means should be checked and corroborated by further investigation of this question. If it should be proven that bacterial invaders frequently gain entrance to the pulps of teeth seriously affected with caries and pyorrhea, it may come to pass that our present conceptions of pulp conservation for such teeth may undergo a radical change. The time may come when we will prefer a well filled sterile root-canal to one that is filled with an infected pulp. But for the present let us reserve our judgment upon the matter until the facts of the case are fully established.

In all the discussions regarding the significance of oral diseases in their relation to general health the one common ground of agreement upon which all are united is that the greatest hope of safety lies in the prevention and the early correction of oral diseases. Great as the diversity of opinion has been regarding the disposition of infected pulps and peridental tissues, all are agreed that the institution of suitable measures of prevention of dental and oral diseases would eliminate and practically solve the problems of oral infection. Frequent mention of these views are made in many of the articles devoted to the discussions of oral diseases and a number of contributions have been devoted solely to the consideration of preventive dentistry. N. S. Hoff (20) reviewed the development of

periodontia. A. H. Merritt (21) discusses oral prophylaxis as a preventive measure and concludes with the statement "oral prophylaxis when given its broadest interpretation can be made a most efficient instrument in the prevention of dental diseases; that it far outranks any service which restorative dentistry can confer; that it should be the first duty of every dentist to make the mouths of his patients clean, and teach them to keep them so; that in so doing the dental profession cannot only largely prevent the incidence of these diseases within the mouth, but what is of greater importance, prevent that vast train of diseases which have for their causes the infections associated with non-vital teeth and pyorrhea alveolaris."

H. E. Friesell (22) treats of tooth form in its relation to oral infection. He shows the importance of full normal tooth contours, marginal ridges and approximal contacts and their relation to the health of the surrounding gingival tissues. This paper should be of vital interest to all operative dentists.

Three articles (23) (24) (25) were devoted to the methods of brushing the teeth and one of them (24) contains the report of a committee appointed by the Academy of Periodontology to investigate this subject. In this report an ideal brush is described and four methods of brushing the teeth are outlined, namely; The rolling stroke, the up and down stroke, the circular stroke, and the vibratory method. The great majority of the members of the Academy favored the rolling-stroke method.

The most notable statement upon preventive dentistry is the report of A. C. Fones (26) giving the results of the work in the public schools of Bridgeport, Conn. during the past five years. This work has been largely accomplished by the dental hygienists under the direction of Dr. Fones and his assistants. The system which was adopted consisted of four parts, "First, prophylactic treatment or the actual cleaning and polishing of the children's teeth and chart examination of the mouths. Second, toothbrush drills and classroom talks. Third, stereopticon lectures for the children in the higher grades; and fourth educational work in the homes by means of special literature for the parents." The results of this work as seen at the end of five years were very gratifying. A marked decrease of dental caries was noted which, in the more favorable schools, attained 67% reduction. Very marked results were also noted in the general health, mental alertness and progress in school of children whose mouths were kept free from oral filth and infectious materials. It was also observed the mouth hygiene is a very powerful factor in the restriction of communicable diseases in childhood. Fones concludes with the statement, "We know of no one movement from the health standpoint that would be more beneficial to the nation at large than a serious educational campaign to eliminate dental caries as far as would be possible. There is so much in this work that cannot be measured in figures—especially the moral uplift which comes to the individual when he is taught the importance of cleanliness and a wholesome respect for his body."

Several commendable papers dealing with the cause, course, and treatment of pyorrhea alveolaris have been published thru the year. Stillman (27) restates his views on traumatic occlusion and calls attention to the fact that when teeth are under excessive occlusal stress the surrounding peridental structures are injured and thereby lowered in their resistance to infections. C. P. Wood (28) points out that by far the great majority of traumatic occlusions arise from the loss of one or more teeth and the failure to retain the space thus vacated. He places great emphasis upon the importance of tooth shifting following extraction as an important factor in pyorrhea and believes that in every case a bridge or retainer should immediately be in-

serted after the loss of a tooth. He also shows the futility of treating cases of pyorrhea in which drifting of the teeth and traumatic occlusion have taken place without first correcting these conditions and placing the teeth in harmonious relationship to each other. Merritt (29) gives a more general review of the causative factors concerned in the disease including both local and systemic causes. Just recently a chart made by J. O. McCall (29A) has been published in which the great multiplicity of factors concerned in the process are graphically set forth.

F. B. Noyes (30) describes the histological changes in the peridental membrane and surrounding bone in pyorrheal infections. He states that the destructive inflammations are caused by recurrent infections acting in an intermittent manner and that these infections penetrate the tissues along the lymphatic channels.

McDonagh in two papers (31) (32) considers the recession of the gums and its treatment. He first cites the causes of gum recession and states that it never occurs about teeth that have been properly crowned. He believes that by proper treatment labial recession may always be stopped and the tissues may usually be made to grow back to their normal position. His method of handling these cases is to remove all irritants, smooth the roots and reduce the labial convexity slightly. He then dissects back the soft tissues to the point at which they are healthy and subsequently seeks to direct an active flow of blood to the part by the application of irritants or by suction cups. He shows cuts of a number of cases in which he has successfully accomplished a new growth of gum tissues which had been retracted.

Three drugs have been suggested as specifics for the treatment of pyorrhea namely, Myristica or powdered nutmeg (33), gentian violet (34) and Dakin's solution (35). Each of these are recommended as bacteriacides or amebacides which should be introduced into the pockets after instrumentation.

Perhaps the most notable suggestion of the year for treatment of this disease has been advanced by A. D. Black (36) (37). He recommends in advanced pyorrhea the cutting away of all overlying gum tissues about the lesions and trimming down the remaining alveolar bone to remove all diseased portions and to square up the alveolar borders. The bone surgery he accomplishes with chisels and engine burs. In this he attempts to obtain a healing of the remaining alveolar stumps about the teeth and to cover them over with mucous membrane at a lower level on the roots leaving the affected portions of the roots permanently denuded and bare. These measures suggested by Black are quite as heroic as those previously made by Zentler. Both writers tacitly admit by their suggested operation that they are unable to obtain satisfactory results by the ordinary submucous technic. It is unlikely that these methods of heroic multilation will appeal to those who have mastered the technic of subgingival instrumentation.

Clarence Grieves (38) describes Vincent's angina as he saw it in the army camps and outlined the treatment. He warns against all operative procedures in the early stages, preferring high pressure sprays of hydrogen dioxide and potassium permanganate followed by sedatives. After the pseudo-membrane has disappeared and the infection is reduced he recommends thoro oral prophylaxis and the maintenance of oral hygiene. L. C. LeRoy (39) takes up the discussion of Grieves' paper reviewing the causes and gives his personal method of treatment. This consists first in the reduction of the infection by Dakin's solutions and later flowing into the interdental spaces and about the gingivae black copper cement which is allowed to set and remain in position for its continuous antiseptic effect. The author claims to

have had great success in treating the disease by this method.

In the realm of operative dentistry Conzett and Hollenbeck (40) have begun a detailed consideration of gold inlay technic. In the first issue, the only one that has so far appeared, the authors have treated cavity preparation and the handling of enamel margins. The National Journal has reprinted from the Journal of Mining Engineering an article on the testing of amalgams by A. W. Gray (41). In the work which Grey and his assistants have done on this subject they have found that the instruments which were formerly used by G. V. Black in the tests which he made were open to criticism and in consequence the data obtained from such instruments were of questionable value. It was found that the crushing stress of amalgams varied greatly at different temperatures, but slight changes in temperature producing marked variations in crushing strength. As Black's machine could not be corrected for temperature the readings, which he obtained, must necessarily have been profoundly influenced by the varying temperatures at which the tests were made. Grey also found that the strength of an amalgam depended upon packing pressure, i.e. the strength increased in geometrical proportion with the pressure applied in packing. He states that "Contrary to general opinion, the soft, fine-grained amalgam obtained by long continued trituration with plenty of mercury hardens into a stronger filling than does a less plastic mix. By making an alloy so that the last movement shall be an expansion of desirable amount when a practicable packing pressure is employed we secure a filling that approaches the ideal in regard to rapid hardening, final strength, plasticity and volume changes."

E. H. Mathias (42) reports experimental work on the behavior of investment plaster in the vulcanizing of rubber dentures. The author has attempted to determine the amount of expansion and contraction which plaster undergoes in the process of vulcanization. He states that increasing the water-plaster ratio reduces the expansion of plaster but weakens the strength of the model. He finds that the finer ground plasters are the stronger and that the degree of fineness has little or no effect upon expansion. Vulcanite dentures flasked with flasking compound having plaster of Paris as a base should be cooled and removed from the flask at once upon completion of vulcanization. Vulcanite flasks should be equipped with a spring tension to allow for expansion of rubber and a large excess of rubber should not be used. The entire article is worthy of study by those who use plaster of Paris.

In the field of Crown and Bridgework, E. H. Mauk (43) voices the opinion that the scathing criticisms which Hunter made of this branch of dentistry were not altogether fair or justifiable in that his deductions were drawn from examples of the poorest type rather from those which were of the best or even average types. Mauk emphatically states that crown and bridge prosthesis is an institution that is here to stay and quite as permanent as the cavity filling or the artificial denture. He points out, however, that certain basic principles are fundamentally necessary to successful crown and bridge prosthesis. These he outlines as follows:

1. Physiologic tone of all supporting anatomical elements and investing tissues.

2. Adequate support for the bridge structure in proportion to the work demanded of it.

3. Protection to the soft tissues by outline and contour form in accordance with dental anatomy.

4. Normal articulation implying also normal occlusion. The writer then enlarges upon the several principles outlined which he says "may not be all that is essential in determining where and

how a bridge shall be placed, but it is certain that disregard of any one of them will make its effect known in a material shortening of the term of service your bridge construction will render."

M. L. Ward (44) calls attention to the general attitude of skepticism regarding bridge-work and says that many "refrain from doing bridge-work rather than make an effort to improve the defective features and retain the good ones." He urges that those who are afraid to do bridge-work resume their efforts to place the right kind of a bridge in the right place rather than refrain from doing bridge-work. At the outset he emphatically states that "an effort to do justice to a general practice with only one type of such (bridge) work is as nonsensical as to try to serve the best interests of a general practice with one filling material, one type of surgical operation, one procedure in orthodontia, one in prosthodontia, one method of handling pyorrhea, or one way to treat the pulps of teeth. There should be no such thing in the mind of an advanced thinker as the best type or form of bridge-work to apply. The thought that should be foremost in the mind of such a man is to have such a variety of types so thoroly mastered that he is able to apply the one which seems most suitable for the case in question, and in many instances to combine two or more types in order that the maximum may be rendered and the minimum of undesirable features presented." He then calls attention to three principal changes which are being made in the practices of the more progressive bridge-workers, namely

1. Reduction in the number of full crowns used.

2. As a result of this a much smaller number of teeth are devitalized.

3. Cements which are antiseptic are used for the retention of crowns and bridges.

After reviewing the relative merits of fixed and removable forms of bridges he says "I take this opportunity to record myself as saying that from now on the chances for infection at either the apex or cervix of the roots of teeth shall be the first thing considered when I am consulted about bridge-work. Much as I would like to place a good removable bridge in the mouths of some patients from the standpoint of mastication, and sometimes appearance, I shall have to be shown that what I am to accomplish for the patient must completely overbalance the destruction to the teeth necessary to place the bridge, which often increases the liability to apical and cervical infection..... We should in my opinion adopt what appears to be a more modern tendency, viz. cut down the number of full crowns and thereby cut down the number of devitalizations, even if we are obliged to cut down the amount of both fixed and removable bridge-work." In conclusion he states that "In our practice at the present time we are using almost exclusively the red and black copper cements and the cuprous iodide in the form of copper zinc for all forms of crowns. In the cases that look to be difficult to be kept clean, we are adopting the jet black one made by Ames and Caulk, and the red ones made by Fleck and Caulk. In cases where a decidedly red or black color would be objectionable, we are using the copper zinc product, about equal parts of copper and zinc with crown and bridge powder."

In the field of surgery several commendable articles have been devoted to post war surgery and the restoration of lost portions of the face and jaws. Among the contributors to this subject are G. V. I. Brown (46), V. H. Kazanjian (47) (48) and Major H. D. Gillies (49). In the general field of surgery C. J. Lyons (50) reviews the various pathological conditions of the mouth and their treatment. He specially considers the tumors of the mouth, Vincent's angina, antrum disease, and

periapical infections. In a second paper (51) Lyons discussed the indications and contraindications for root resection and this paper is followed by a description of the technic of this operation by Carl D. Lucas. The greatest stress is laid by the first writer on the necessity of proper diagnosis taking into account both local and general conditions. C. H. Oakman (52) describes the diseases of the maxillary sinus and their treatment. He gives the etiology, pathological changes, and the various methods of operative interference calling attention to sundry complications which may arise.

W. A. Cook (53) gives a very interesting report of his findings in a research which he made in the Anatomical laboratories of the University of Michigan. In this study he examined 100 skulls making fifty-two measurements of each to determine the exact relationship of various landmarks of the skull and jaws upon which injections for conductive anesthesia might be based. From the tabulations which he made Cook succeeded in establishing certain definite relationships in the measurements and discovered a method by which the various foramina of the jaws might be definitely located in any type of jaw. The system which he has devised for locating injections for conductive anesthesia is a most valuable contribution to this particular field of dentistry.

In conclusion we would call attention to the Anniversary number of the Dental Cosmos (54) in which several very commendable histories of various departments of dentistry are given as follows:

Operative Dentistry, by Edwin T. Darby.

Dental Prosthesis, by Geo. H. Wilson.

Orthodontia, by Milo Hillman.

Dental Therapeutics, by Herman Prinz.

Oral Surgery, by Truman W. Brophy.

Dental Education, by C. R. Turner.

Dental Journalism, by W. H. Truman.

These articles give a splendid prospective view of the trend of dentistry during the past fifty years and the advancement that has been made in every branch of the profession during that time.

BIBLIOGRAPHY.

1. Dead Teeth—J. Novitsky in the Dental Summary, 1919, p. 426.

2. To Extract or Conserve Diseased Teeth—T. B. Hartzell in The Journal of the National Dental Association, December 1919, p. 1111.

3. Focal Infection With Special Reference to Oral Sepsis—E. C. Rosenow in The Journal of the National Dental Association, November 1919, p. 983.

4. The Removal or Retention of Pulpless Teeth—J. A. Pollia, W. C. Alvarez, F. L. Platt, E. D. Chipman, K. F. Meyer, Robt. Burns, Jr., and Guy S. Millberry in The Journal of the National Dental Association, February 1920, p. 175.

5. Shall Pulpless Teeth be Retained?—C. N. Johnson in The Journal of Dental Research, December 1919, p. XCIX.

6. The X-ray in Dental Practice—C. E. Kells in The Journal of the National Dental Association, March 1920, p. 241.

7. Oral Sepsis and Its Relation to Systemic Disturbances—Don M. Graham in the Items of Interest, August 1919, p. 585.

8. The Status of the Devitalized Tooth—Don M. Graham, in the Items of Interest, December 1919, p. 905.

9. The Question of Dental Infection in the Production of Nervous and Mental Diseases—Chas. K. Mills, M. D., in The Journal of the National Dental Association, March 1920, p. 309.

10. The Diagnosis and Treatment of Conditions Resulting from Diseased Dental Pulps—E. D. Coolidge in The Journal of the National Dental Association, April 1919, p. 337.

11. A Practical Root-Canal Technic—A. B. Crane in the Dental Cosmos, December 1919, p. 1193.

12. What Constitutes Reinfection of Root-Canals, and How Can It be Prevented?—H. Prinz in the Dental Cosmos, October 1919, p. 954.

13. Silver in Dental Therapeutics—U. G. Rickert in The Journal of the National Dental Association, October 1919, p. 930.

14. The Efficiency of Current Methods of Sterilization of Dental Instruments and Root Filling Materials—S. E. Pond in The Journal of the National Dental Association, April 1919, p. 350.

15. Some Causes for Periapical Infections—Carl J. Grove in The Journal of the National Dental Association, August 1919, p. 669.

16. Diseases of the Dental Pulp—Herman Prinz in the Dental Cosmos, April 1919, p. 308.

17. Histo-Pathology of the Teeth—Vida Latham in the Dental Items of Interest, October 1919, p. 768.

18. Bone Absorption Around the Roots of Teeth

Eugene S. Talbot in the Dental Cosmos, May 1919, p. 361, and continued in succeeding issues.

19. The Bacteriology of Vital Pulps—Henrici and Hartzell in the Journal Dental Research, December 1919, p. 419.

20. The Development of Periodontia—N. S. Hoff in The Journal of the National Dental Association, October 1919, p. 897.

21. Oral Prophylaxis in Its Relation to Preventive Dentistry—A. H. Merritt in the Dental Cosmos, June 1919, p. 473.

22. The Significance of Tooth Form in the Prevention of Oral Focal Infection—H. E. Friesell in The Journal of the National Dental Association, July 1919, p. 579.

23. A Definite Technic for Mouth Care—H. G. Morton in the Dental Items of Interest, May 1919, p. 381.

24. The Tooth Brush and Methods of Cleaning the Teeth—J. J. Sarrazin in The Journal of the National Dental Association, February 1920, p. 155.

25. The Ideal Method of Brushing the Teeth and Standardizing the Tooth Brush—W. J. Charters in The Journal of the National Dental Association, April 1919, p. 297.

26. Report of Five Years of Mouth Hygiene in the Public Schools of Bridgeport, Conn.—A. C. Fones in the Dental Cosmos, July 1919, p. 607, and in the Dental Items of Interest, July 1919, p. 505.

27. Traumatic Occlusion—Paul Stillman in The Journal of the National Dental Association, August 1919, p. 691.

28. Induced Malocclusion as a Factor of Pyorrhea Alveolaris—C. P. Wood in the Dental Items of Interest, September 1919, p. 684.

29. The Etiology of Periodontociasia—A. H. Merritt in The Journal of the National Dental Association, March 1920, p. 295.

29A. The Etiology of Periodontociasia—J. O. McCall in the Dental Items of Interest, February 1920, p. 116.

30. Pathological Changes in the Peridental Membrane—F. B. Noyes in The Journal of the National Dental Association, February 1920, p. 123.

31. The Necessity for Early Diagnosis of Periodontal Diseases—A. J. McDonagh in The Journal of the National Dental Association, October 1919, p. 873.

32. Periodontology with Special Reference to Recession of the Gums—A. J. McDonagh in the Journal Dental Research, December 1919, p. 423.

33. Myristica in the Treatment of Pyorrhea Alveolaris—Joseph Leidy in the Dental Cosmos, April 1919, p. 295.

34. Selective Bacteriostasis in the Treatment of Infections with Gentian Violet—J. W. Churchman in the Journal of American Medical Association, January 17, 1920, p. 145.

35. Dakin's Solution in the Treatment of Pyorrhea—L. P. Henneberger in the Dental Cosmos, June 1919, p. 489.

36. Diseases and Treatment of the Peridental Membrane—A. D. Black in the Dental Summary, October 1919, p. 721.

37. Treatment of Chronic Suppurative Pericementitis—A. D. Black in The Journal of the National Dental Association, February 1920, p. 134, and in the Dental Summary.

38. Ulcero-Membranous Gingivitis — Clarence Grieves in the Dental Cosmos, September 1919, p. 819.

39. A Specific in the Treatment of Vincent's Peridental Angina—L. C. LeRoy in the Dental Cosmos, January 1920, p. 93.

40. The Gold Inlay—Conzett and Hollenbeck in The Journal of the National Dental Association, December 1919, p. 1067.

41. Metallographic Phenomena Observed in Amalgams—A. W. Gray in The Journal of the National Dental Association, June 1919, p. 513.

42. A Study of the Behavior of Plaster of Paris as an Investment in the Process of Vulcanizing Dental Rubber—E. H. Mathis in The Journal of the National Dental Association, May 1919, p. 432.

43. Favorable and Unfavorable Conditions in Crown and Bridge-work—E. H. Mauk in The Journal of the National Dental Association, June 1919, p. 487.

44. Modern Tendencies in Bridge-work—M. L. Ward in the Dental Cosmos, December 1919, p. 1169.

45. Treatment of United Fractures of the Jaw—Dental Department, U. S. Army, Cape May—McCauley and Worthley in the Dental Cosmos, May and June 1919.

46. Surgical Restoration of War Injured Faces and Jaws—G. V. I. Brown in the Dental Cosmos, February 1920, p. 206.

47. Early Suturing of Wounds of the Face—V. H. Kazanjian in The Journal of the National Dental Association, July 1919, p. 628.

48. Observation on War Surgery of Face and Jaws—V. H. Kazanjian in the Dental Cosmos, March 1920, p. 283.

49. Present Day Plastic Operations of the Face—H. D. Gillies, British Army, in The Journal of the National Dental Association, January 1920, p. 3.

50. Some Pathologic Conditions of the Mouth and Their Treatment—C. J. Lyons in the Dental Summary, August 1919, p. 597.

51. Indication and Contraindication for Root Resection—C. J. Lyons in The Journal of the National Dental Association, September 1919, p. 790.

52. Diseases of the Maxillary Sinus—C. H. Oakman in The Journal of the National Dental Association, March 1920, p. 274.

53. Anatomical Measurements Relative to Conductive Anesthesia—W. A. Cook in The Journal of the National Dental Association, November 1919, p. 1030.

54. Anniversary Number of the Dental Cosmos, January 1920.

RESORPTION OF APEX AND FIBROSIS OF THE PULP.

By Guthrie McConnell, M. D., Cleveland, Ohio.

(From the Research Institute of the National Dental Association, Cleveland, Ohio.)

THRU the courtesy of Dr. Thomas J. Hill, of Cleveland, we have been given permission to report the following case:

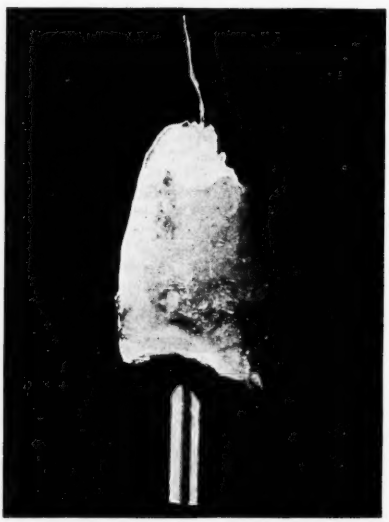
The patient was a young man of about nineteen years who presented himself to Dr. Hill for treatment. As a result of the examination, it was decided that amongst certain other teeth, the upper second bicuspid should be removed. According to the statement of the patient, this tooth had at no time given any trouble, nor was it at present causing discomfort. There was no filling in the tooth and on testing it electrically, it was found to be vital. It was decided, however, that the tooth should be extracted and this was done.

The accompanying photograph shows the condition that was found at the time of extraction. It can be seen that one-third or more of the root has been absorbed completely. Projecting from the remaining portion is a fine hair-like process, quite stiff and firmly attached to the contents of the pulp chamber.

The tooth was decalcified, imbedded, sections cut and stained with hematoxylin and eosin, Van Gieson, and Mallory's anilin blue. The findings are shown in the photographs. The zone of pulp tissue lining the canal is in a practically normal condition, the loose semi-embryonal formation being very distinct. Lining the greater part of the wall is an extremely well-preserved layer of odontoblasts.

The central part of the pulp contains an oval mass very sharply delimited from the surrounding structure. This

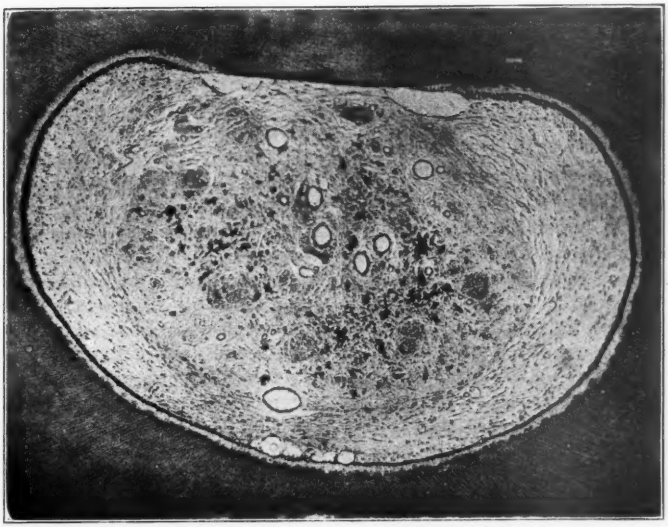
Figure 1.



Photograph showing absorption of root with fibrous pulp extending from the canal.

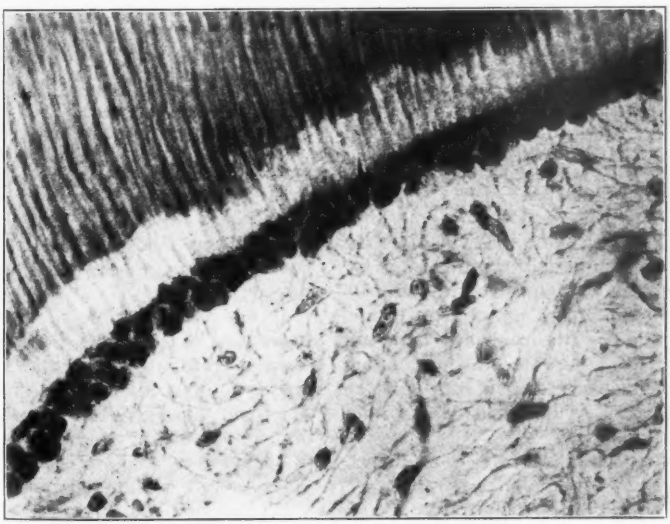
area is composed of a dense mass of adult fibrous tissue in which are numerous cross sections of well-developed blood vessels of different sizes, a few containing blood, the majority being empty. In addition to these, there are numerous irregular bundles of varying sizes which

Figure 2.



Cross section of pulp cavity showing advanced fibrosis of central portion with irregular dark staining deposits of lime salts. Numerous dilated blood vessels and bundles of vital nerves.

Figure 3.



High power photograph of layer of odontoblasts, showing a translucent zone between the cells and the dentin. Embryonal type of connective tissue of the pulp clearly shown

give a cellular appearance. Examination under high power shows a minute central dot that has taken the stain while around it is a clear zone. Each bundle is composed of many similar structures, evidently medullated nerve fibres.

Scattered thruout the fibrous mass are numerous irregular bodies that have stained more deeply than the neighboring tissues. On account of their staining reaction and lack of any definite structure they are thought to be deposits of lime salts.

The interesting feature in the case is the resistance of the pulp tissue. In spite of the fact that so large a portion of the root had been destroyed, the pulp remained, and that it was still vital at the time of removal was shown by the tests applied. The microscopic examination also indicated that the nerve fibres were intact.

The formation of the dense fibrous tissue was probably the result of a long continued irritation, which apparently was not microbic in origin as neither plasma cells nor polymorphonuclear leucocytes were present. A brief examination with the oil immersion lens did not show any bacteria.

As far as the lime deposits are concerned, a full discussion would take up too much space, but such changes may be found wherever there has been necrosis of the tissue, provided that the necrotic areas are so large or so situated that they cannot be absorbed.

A NOTE ON STAINING AND MOUNTING SECTIONS OF THE DENTAL TISSUES.

By Arthur Hopewell-Smith, Sc. D., L. R. C. P., M. R. C. S., L. D. S.,
University of Pennsylvania, Philadelphia, Pa.

(Read before the National Dental Association at Its Twenty-third Annual Session, New Orleans, La., October 20-24, 1919.)

IN DEALING with the modern technic of dental microscopy, the writer has repeatedly encountered great difficulties with regard to the process of mounting sections of the combined hard and soft dental tissues in Canada balsam. Profound changes occur during their passage thru xylol, cedar oil or other "clearing" agents.

The troubles have arisen in connection with the dissimilar physical properties of the two absolutely unlike tissues. For, while under ordinary circumstances, the dentin contracts and curls up, the pulp contracts and shrinks, and its component parts become thereby utterly ruined.

It has been possible to avoid these distortions of the parts by the use of Farrant's medium. This, however, being an aqueous mountant has its limitations and defects, as evidenced by slow evaporation, and a tendency to formation of air-bubbles, make a somewhat temporary nature of the preparation.

With a view to obviating these inconveniences, and minimizing these defects and dispensing thus entirely with the

use of watery media, the writer now follows, with highly satisfactory results, a plan by which the usual method of staining normal and embryonic tissues with haematoxylene and eosin can be utilized.

The process is applicable to sections of the dental pulp *in situ,* the periodontal membrane *in situ,* hard palate, bone, tumors containing bone or calcareous deposits or formations, adventitious dentines, pulp nodules, etc., in short, any condition where there is close juxtaposition of the hard and soft parts.

The following method can be recommended with confidence to those microscopists who desire satisfactory results.

Sections which have been already decalcified in hydrochloric acid or formic acid, cut on an ether-freezing microtome, and stained in the usual manner, with haematoxylene, are passed, on section lifters, thru the following reagents:

(1) Alcohol 50% for five minutes.
(2) Alcohol 70% for five minutes.
(3) Alcohol 80% for five minutes.
(4) Alcohol 95% and Eosin for ten minutes.

The eosin is added in sufficient quantities to the alcohol to produce a deep rosy-red color.

Stained sections are then removed to:

(1) Absolute alcohol for fifteen minutes.
(2) Carbol-xylol (No. i) for five minutes.
(3) Carbol-xylol (No. ii) for five minutes, and finally mounted in Canada balsam.

The presence of carbolic acid in xylol prevents the shrinkage of the dental tissues previously alluded to. The reagent is made up of one-third pure white crystalline carbolic acid and two-thirds of xylol.

If the carbo-xylol is freshly prepared in small quantities as required, and only employed for "clearing" few sections at a time, good effects will be obtained, and success thus assured.

ORAL HYGIENE IN RELATION TO PUBLIC HEALTH.

By Alfred C. Fones, D. D. S., Bridgeport, Conn.

(Read before Illinois State Dental Society, March 22, 1920.)

Editor's Note:—Original Article Published in April Issue of The Journal.

DISCUSSION.

C. N. Johnson, Chicago.

If I had plenty of money I would settle this question; I would make a demonstration that would tell more than all of our discussion here. If I had the means I would establish an institution along the lines of the Forsyth or the Eastman, and in this connection I would like to pay a tribute, as a member of the dental profession, to Mr. Forsyth and to Mr. Eastman. These men have done more for the development of dentistry and for the prevention of disease in their cities than any other one agency. It is an education to Boston, and to Rochester as to the significance of dental hygiene to have these institutions in those cities, and we want one in Chicago. One reason why we want such an institution in Chicago has been demonstrated very clearly tonight by the Health Commissioner of this city when he announced that the Council of the great city of Chicago had appropriated five thousand dollars for dental hygiene. That situation, it seems to me, is hopeless, and this is not the first time I have felt it to be hopeless. If I had my way in this matter, I would expect to pass on the problem of the care of these children to its proper sponsor, and that is the state. It should not be a private enterprise. It belongs to the state. If we had this enterprise under the direction of the Board of Education of this city, and if we had men in office of the character of the gentleman who represents the Board here tonight it would be cared for properly, and we would not have to go to the Finance Committee of our City Council every year and beg for a few dollars. I made the statement before, and I repeat it now, I shall never go before the Finance Committee of our City Council again and beg for an appropriation for the care of the school children of Chicago. It is too humiliating.

But before we can get the state or any public officials to take interest in this matter or in any other progressive matter we must demonstrate by private enterprise that it is a public utility. I want to pay tribute here tonight, as I have done before, to one man in this city who has done something along this line in connection with the service rendered to school children—Mr. Julius Rosenwald. (Applause.) And yet the very best we have done is not good enough. We have aimed to relieve disease after it has developed. Our efforts should all be centered in preventing disease before it occurs, and the only way we can do that is by educating the people as to how they can so care for themselves as

to prevent disease. We cannot prevent disease for them. It is within their province to do this.

Harvey J. Burkhart, Rochester, N. Y.

I want to explain the purpose of the founding of the Rochester Dental Dispensary.

First, I want to thank Dr. Fones for the splendid presentation he has given tonight and to make public acknowledgement of our indebtedness to him for the pioneer work which he has done in Bridgeport, Connecticut, and to say that many of the parts of the system he has outlined have been adopted in our work in Rochester.

As you doubtless know, the Rochester Dental Dispensary was founded by Mr. George Eastman. The purpose of the founding of that institution was to prove what could be accomplished in preventive dentistry. Mr. Eastman went into this project, as he does all other business projects, after a very careful examination, and I am able to say to you tonight that he considers it one of the very best investments which he has made in Rochester. In fact, he considers it the very best of his many numerous public charities.

The buildings cost approximately five hundred thousand dollars. At the time of the gift it was specified that he would endow it to the extent of seven hundred and fifty thousand dollars at the end of five years if the work proved satisfactory. At the end of three years he was satisfied with the work and passed over seven hundred and fifty thousand dollars, and for good measure, gave two hundred and fifty thousand dollars more. (Applause.)

One of the conditions of founding the Rochester Dental Dispensary was that the city of Rochester should make an appropriation annually for five years of twenty thousand dollars for doing prophylactic work. In the institution proper, there is no prophylactic work done except in the orthodontia department. All prophylactic work is done in the public schools by squads of licensed dental operators and licenced dental hygienists. The only licensed dentists doing prophylactic work in public schools are the young men and young women with the D. D. S. degree who are in charge of the service. At the present time, there are sixty-nine graduate dental hygienists and students employed in doing prophylactic work in the public schools. This work is not confined to the public schools. There are about forty-five public schools in Rochester, thirty parochial, and ten orphan asylums. The work is done in all of these, regardless of whether they receive public money or whether they are private charitable institutions. The squads of hygienists visit these public and parochial schools twice each year. We have a portable equipment, such as chairs, sterilizers, engines, medicaments, etc., with which to do the work. They are placed on a big truck, carried to the school, and the work done in the most suitable and available place. After the work is finished, the outfit is loaded again onto the truck and carried to another school, and in this way we go from one school to another. We made the rounds twice last year of every public, parochial school and orphan asylum, except one, and that school objected to our doing prophylactic work because we would not charge the children individually for doing the work. The work cost more than twenty thousand dollars; it cost about twenty-five thousand dollars, and the dispensary furnished the difference between the city appropriation and what the work cost. In the dispensary, proper, we do general dental operations, consisting of filling and extracting, etc. We have one hundred and fifty orthodontia cases under treatment all the time. In addition to that, last autumn we opened a hospital where we are do-

ing nose and throat work, and expect to do harelip, cleft palate work and other oral surgical operations. Our object is to coordinate our activities with the one thing in mind continually and that is, preventive dentistry.

Last year there were over fifty thousand visits to the dispensary. The mouths of over thirty-five thousand children were cleaned twice last year in the schools. I could not begin to give you the exact figures, but the number of fillings and various other operations which were performed were enormous. The cost of running the dispensary proper was something like sixty-five thousand dollars. We had an income of a million dollars from Mr. Eastman, and fourteen prominent men in Rochester gave a thousand dollars a year toward this work and we broke even.

I want to ask the college men present to say a word of encouragement, to the graduates from their schools and urge them, wherever a dispensary is available, or wherever they may obtain postgraduate work, such as can be given in a dispensary, to take advantage of it. It not only will be of great value and benefit to the graduate, but it will also help on the propaganda of oral hygiene.

I want to amplify what Dr. Fones has said with reference to the dental hygienist. He is not overpraised. I want to say to you, after three years of practical experience, in the doing of this work the dental hygienist is miles ahead of the ordinary dental graduate. There are two reasons for it. In the first place, the young man who graduates from college, after a little while, finds that this work becomes irksome, and he has not an appreciation of the value and of the necessity of prophylactic work, that he will obtain later on as he becomes more familiar with dental practice. In the second place, the dental hygienist, in my opinion, is more loyal to her work; she is neater in appearance and does her work very much better than the average dental graduate. I may be criticized by some of you gentlemen for making such a broad statement, but if you question my statement or the statements made by Dr. Fones, you are at liberty to come to our institutions and see for yourselves. You need not send us a telegram in advance telling us you are coming. The work is there to speak for itself, and you will have the liberty of observing that work not only in the dispensary, but in the public schools and satisfy yourselves as to the truth of the statements which we make.

I want to say another word. You have in prospect some legislation with reference to the dental hygienist. Do not be small and split hairs over that. None of them will take away any of your dental practice. I want to say further, that with the 150 graduates of the school with which I am connected, I have yet to hear a single complaint from a dentist of improper conduct on part of a graduate dental hygienist. That is the best answer to the argument that some dentists are putting up that they are going to become illegal dental practitioners.

John Dill Robertson, Commissioner of Health of the City of Chicago.

In reading the paper I was impressed with this idea, that in a public health program we must not give too much credit to any one thing in hygiene to the exclusion of other possible factors. Our contagious disease records in Chicago parallel those mentioned in Dr. Fones' paper. For instance, during the last five years 1023 children died from scarlet fever. In the five years preceding that period there were 2616 deaths, a difference of 1593, and still we cannot claim much credit for dental hygiene, for during the greater part of that time we had but six dentists for 500,000 children in the public and parochial schools.

The Chicago dentists and the Chicago

Dental Society have always taken the right attitude in reference to proper hygiene in our public schools. The Department of Health has always enjoyed good cooperation from the Chicago Dental Society. They have come to us and volunteered their services in caring for the teeth of public school children. I am sorry the medical profession has not always taken this same stand.

I should like to hear Dr. Fones in his closing remarks say whether or not we, in America, are as bad as his paper would lead us to think. As a nation, are we decaying? I would like to know if he finds in ninety-nine per cent of all school children seven cavities in each mouth full of teeth, and, if so, what is going to happen? Where are we going? Does there not come a time when we get immunity just as we gradually get immunity against tuberculosis? We know what tuberculosis did to the American Indian. I do not know about his teeth. He was generally considered a healthy specimen of manhood, but he was virgin soil, and these bacterial flora, these fungi, these vegetations grew in his tissues very rapidly because he had neither inherited nor acquired immunity, and that is the point I want to emphasize and bring out, if I may; namely, do those people who do not get focal infections become vaccinated? Is there any advantage in having a mouthful of bad teeth? (Laughter.) I am simply asking this question for the sake of argument. If you have a mouth full of different kinds of staphlycocci and streptococci and do not get focal infections, do you become vaccinated?

Cabot, in reviewing the literature on tuberculosis, states that if we cleaned up all tubercle bacilli so that there were none, it might be a bad thing, because there would not be any bacteria around to vaccinate anybody. (Laughter).

I should like to ask a great many other questions. First of all, do they pasteurize their milk in Bridgeport, and are they chlorinating their water supply? It is significant that the City of Chicago chlorinates all of its water and pasteurizes all of its milk. Coincident with this, there has been a reduction not only in scarlet fever, but nearly the same reduction in diphtheria and in tuberculosis for the last four or five years. We have got to weigh all the measures taken in Bridgeport in order to evaluate the work which has been done there. I want to ask another question. How much damage do you think is done to the teeth and surrounding tissues by the use of the hard tooth brush in the hands of the unskilled brusher? Supposing there is infection on the surface and the brush digs in, do you not think there is more or less danger of spreading the infection? Sometimes I think a lot of harm is done by these rough, stiff tooth brushes.

Another question I should like to ask is with reference to our foodstuffs, especially with regard to the soft, puffy things we eat. Would it not be a good thing to stoke our furnaces with a little hard coal once in a while? (Laughter).

There is a gentleman by the name of Hyde who writes for the Chicago Tribune. He came into the Health Department one day and said to me: "Doctor Robertson, down on the southwest side there are a lot of foreigners huddled together into one room; there are as many as six or eight or ten in a room, and the sanitary conditions are terrible." I said to him: "What about their teeth?" He replied, "I did not look at their teeth; I will go back and look at them." He visited them again and came back and said they had the finest teeth he ever saw in his life; they were white and shiny, and there was not a toothbrush in the house. How could this be? A great many people have bad teeth, and hundreds of them

who have bad teeth do not have any trouble from focal infections.

A word or two in reference to the practical end of this matter. It is a fine thing to have dental hygienists. I am convinced of that. It is a fine thing to have trained nurses and spend three years training them, and when they get thru one-third of them get married immediately. They simply take one case and keep it for life. (Laughter). Another third may go off and take up some other line of business; that leaves one-third for general and public health nursing.

As a practical proposition, if we were to go before the City Council and ask for a trained nurse, a trained dental hygienist, a dentist and a school physician to look after the school children the chances are they would throw us out. Today the Finance Committee of the City Council in presenting its budget provided for the munificent number of five dentists for five hundred thousand school children. Think of it! We try to do the best we can with the small appropriations we have for this work. The question arises, is it expedient for the Health Commissioner of the City of Chicago to go before the City Council and recommend that appropriations be made for dental hygienists as well as for dentists, doctors and nurses?

Another question Dr. Fones raises is whether or not this work should be done in the school building where the children are, or taken away from the school building to some other centralized building. This is a very important question. We must take into consideration the economic question of transportation in large cities; it takes money to transport children to and from a central location. Economically such an arrangement is not sound for large cities.

Objection to the giving of charity was raised. I do not think that ought to enter into it. We have a great many bathing places for school children. They do not all use them. Probably it is a good thing they do not. Some children take cold or get sick from bathing, but in the better sections of the city the children do use these bathing establishments. Certain parents will prefer to have their children's teeth taken care of at the public expense; other parents will not. I think that question will settle itself just as in Chicago it has in our Municipal Tuberculosis Sanitarium. To that sanitarium anybody can go; it is open to all citizens; it is as finely appointed a sanitarium as my private sanitarium we have, and yet only poor people go there. It is very seldom that anybody else goes. I think this qustion of free service will always settle itself.

In concluding, I wish to say that I am sure we have all been benefited by this meeting. I hope you, as a State Dental Society, will make so much noise before you leave that the City Council will increase the number of dental operators in our public schools; that they will start out with at least thirty, and then add a few dental hygienists; or, better still, let the dental colleges of Chicago educate a hundred nurses, take them into the dental infirmaries and prepare them to be dental hygienists. I think the latter course would be more expedient than if we attempted to establish at once a new division of dental hygienists. I thank you. (Applause).

William A. Evans, Chicago.

I am very glad to have heard the paper of Dr. Fones and the discussion of Dr. Burkhart. Mr. Bowen has said that he wished these slides could be shown before organizations of child welfare workers. I should like very much indeed if they could be shown to health department organizations, to meetings of demonstrators and executives in their annual conferences. It would be very valuable if health departments could see the technic of operation of school hygiene work; understand just

how it is applied, how to do it, and how not to do it.

I hope very much that Dr. Fones and Dr. Burkhart will take advantage to present these papers before health departments and before men who are actually engaged in health department work. I would like very much if they could go before the meeting of the American Public Health Association and discuss the question of what shall be the preparation of training for school hygienists. On that I am going to have something to say presently. I am going to limit my remarks to two points.

The first relates to the matter of eating sugar. I do not think Dr. Fones' arguments proved his point. I am quite disposed to believe he is correct in his final conclusion, but the argument advanced for that conclusion to my mind is not conclusive. Whether we eat starch or sugar, it does not pass the wall of the intestinal tract until it has been converted into some kind of sugar. It is essential to differentiate between the kinds of sugar. Before either can get thru the intestinal tract it must be converted into sugar, and the kind of sugar itself converted is the same in each instance; therefore, the distinction between starch and sugar has ceased to exist once the intestinal wall has been passed.

For the promotion of dental decay, it is necessary that there should be a certain amount of carbohydrate accessible to the organisms which produce lactic acid and remaining comparatively quiet for a certain length of time. When sugar or starch as sugar gets into the blood stream, it is stored in one or two places, either in the liver of muscles, and it is fed from there under varying circumstances to the blood stream.

We have learned a good deal in the course of the last few years about blood sugar, and the circumstances that determine an increase or decrease in the amount of sugar in the blood. We have found that there are circumstances under which it is considerably greater than it is under other circumstances.

The question arises, what is the relation between those connections and dental decay. There is, for instance, a relative sugar starvation in pregnancy; in other words, that there is less than the normal amount of sugar under these circumstances. You would expect, therefore, there would be a diminished amount of tooth decay during pregnancy. Is that true? Clinically, if we are careful in our observations, the amount of dental decay is increased in diabetes. Those are two illustrations. As a matter of fact, what we are interested in is the amount of sugar excreted from the blood into the saliva or, in other words, a quantitative determination of one sort of sugar or another in the saliva of blood origin under certain circumstances, and can that be connected with tooth decay? I do not believe there is any logic in the idea that the sugar which is in the blood stream can be the basis for the formation by lactic acid bacilli of lactic acid in the blood stream, and that they act upon the teeth to bring about decay. I am quite prepared to believe that as we begin to learn more and more about the amount of sugar in the blood stream in various clinical conditions; that as we begin to learn more and more about the amount of sugar in various excretions and secretions, we may pile up data that may serve as a basis for a conclusion, because I would not be surprised at all if the conclusion is correct, because about this I am sorry there is not an actual parallelism between the amount of bacteria capable of producing decay in the mouth and the amount of decay produced; or, in other words, that there are times when it varies one with the other, the two curves depart from each other very materially. There is some reason for it, and it is barely within the range of possibility

that the recent improvement of diet in the consumption of sugar may be an important factor, and even the logic of the explanation may not be quite that offered by Dr. Fones.

As a health man, I was especially interested in the proposal that in the school hygienist there should be combined the functions of the present dental hygienist and the function of school inspector, and perhaps in some measure the school nurse may combine some of the functions of the school teacher also.

The development of hygienists and the doing of this particular work will make more work for dentists rather than less, just as it makes more work for physicians to have preventive work done than it does not to have it done. The reason is not far to seek. The doing of this work establishes high standards, and high standards mean more work for those who are doing the kind of work necessary to meet these high standards. The best illustration we can have, and the one I usually make use of is the development of the eye specialist. A generation ago there were no eye specialists. Eyes were neglected. Man accepted the inevitable, weak vision, when he reached a certain time of life. Many men accepted it in a fatalistic spirit; it could not be avoided, and therefore it had to be endured. But there came the eye specialist who rendered distinct service. Man saw it was no longer necessary that he should accept a low standard, but he demanded a high standard of eye capacity, and there grew up a large, well paid division of the medical profession—the eye specialists. Some day we will have the same standard for nose conditions, for skin condititions, for chest conditions, for scores of things I might mention. We have not enough medical men to meet that demand. You have discovered as dentists that as you have raised the standards of care of the teeth, you have not dentists enough to supply the demand for the service. The natural outcome of it will be that in your organizations you must work until you have highly trained men whose whole time will be occupied with this work. Around them will be an outer circle of people rendering a service that does not require the same degree of skill; around them there can be a cordon of trained nurses, a cordon of social workers, if you please. I am merely using these as illustrations. In other words, the time must come when, thru organization, there will be a group of men who have expanded their time and money for the acquirement of a high degree of skill, who will confine all their time to giving that amount of skill and be well paid for doing that which they can do better than anybody else can do it, and they will abandon doing things that can be done by anybody. When that time comes nobody will feel competition. They need not fear their newspaper doctor who works for two cents a day, or the other fellow who prescribes over the counter, the druggist, or any service of that type.

To my mind there is no question whatsoever but that the development of dental hygiene, with a trained corps of dental hygienists, is not only a necessity of the social situation, but from your standpoint, speaking of it now from a trade union point of view, it is well for you rather than otherwise. A particularly significant thing to my mind is this: After some four or five or six years of trial in the field of dental hygiene, from those men who have been in close touch with it we find them coming back to the idea that it is impossible to divorce the work of the medical and dental professions. We have got to train joint workers to work in dentistry and work in medicine. That is very interesting.

We have had a great deal of controversy in the field of preventive medi-

cine as to just what should be the training that person should have. Years ago a few of our schools started in by beginning that training with the degree of Doctor of Philosophy in Medicine or in Public Health, requiring as the first essential that a man shall have had a medical degree and build two years thereon. There is need in this country for men trained in that way, but it is a small need. A very great need is for people trained in shorter courses, in what might be termed the art rather than the science of the profession of preventive medicine.

I should like very much indeed if at some time or other we could have a paper from Dr. Fones or Dr. Burkhart in which they would discuss somewhat in technical detail just what type of training the school hygienist should have.

Peter A. Mortenson, Superintendent of Chicago Public Schools, Chicago.

I should like to say a word about the educational phase which you have touched upon tonight. Any nation has the right to perpetuate itself. To do so, we recently called from the country-side and from cities men who are ready to offer their lives, if need be, to be on the field of Flanders and in the hospitals of France; men who changed a war of position into a war of motion in one general direction. These men who were called were the flower of the youth of this land, yet many of them were unable to understand or to carry out an ordinary command; many others were physically unfit, and still others had been stricken by disease until they were unable to carry out the work that was assigned to them—diseases which easily might have been prevented. Is it too much to ask, if a great nation may thus call its best for service, that it shall prepare those men for highest usefulness thru training, and preparation, and physical fitness that shall make them really effective, so that they may not be needlessly sacrificed in a great conflict.

Education has changed. It is a bigger thing than it was. It includes not only mental improvement, not only an attitude of mind, but a physical building up. I am glad indeed that you are considering this very important phase of education. It is something to realize than an ounce of prevention is worth a pound of cure; that what the boy sows, the man shall reap. That is why you are emphasizing so strongly the great value of getting at this thing early in school life, or before school life, if possible.

A generation ago, a group of statesmen were discussing the merits of their respective states. One spoke of the coal and iron mines in his state; another of the grain and products of the fields of his state; Daniel Webster, in speaking of his home district, said, "In my state the hills are kissed by the blue sky; the little lakes nestle in the valleys; in the distance the great, brown granite rock, with a stone face carved in outline, lends its inspiration. Gentlemen, in my state we grow *men.*" As an educator, I should like to paraphrase. Gentlemen, in my city, lapped by the blue waters of the lake; fanned by the breezes from the west; encouraged by the memory of great achievements; inspired by those who have gone before, and still further encouraged by the efforts of men such as you, who are interested in childhood, who are interested in the citizenship of tomorrow, I should like to say, gentlemen, in my city, we grow boys and girls, men and women, who are equipped, who are physically prepared to meet life's battles and to meet them well. (Applause.)

A. L. Bowen, State Superintendent of Charities, Springfield, Illinois.

This has been a wonderful lecture and demonstration, and I am sure the children of Illinois are going to profit by what has been said and shown here

tonight, because I do not believe any public-spirited professional man can go back to his home community without taking into it some of the inspiration that this lecture and these pictures must have generated. I have only a couple of observations that I would like to make.

In the first place, I think something of this kind ought to be presented to all Child Welfare Conferences. In my work as Superintendent of the charitable institutions of Illinois, I have frequent occasions to attend conferences on child welfare. Naturally, the State of Illinois which is expending ten millions of dollars a year in support of its own charitable institutions, is interested in any work that is of a preventive character and which is at all likely to cut down the admission rate to these institutions.

Our state hospitals for the insane alone are increasing their net population three times as fast as the general population of the state. It is easy to be seen that within a short time the burden of caring for these institutions is going to be almost too heavy even for a state with the wealth of Illinois. So I think any demonstration of a preventive character, such as that which has been presented here tonight ought to be presented to conferences which are interested in child welfare. Among the young must be done that preventive work which will bear fruit in the years to come.

The second thought which comes to me is this: In our institutions we have a great deal of difficulty to get sufficient dental service. This is especially true in the large state hospitals for the insane, some of which have as many as thirty-five hundred patients. It has been difficult to convince the legislature and to convince the medical staffs in charge of these medical institutions of the importance of dental service, and it has been impossible to get established thoroly in all of our institutions a service commensurate with their needs. One dentist in an institution of thirty-five hundred insane inmates is not enough. The idea of the dental hygienist comes to me as a partial solution of many of the difficulties we have in these institutions, and I am very much pleased that I have been able to hear this lecture and see this demonstration, because of this one idea, which will be of considerable help to us in solving some of the dental problems which confront us in our state charitable institutions.

Harvey J. Burkhart, Rochester, N. Y

I only want to answer one point that the Commission of Health of the City of Chicago made, and that was the distinction that is made between the central dental clinic and the clinics in the various public schools. Our experience teaches us that the proper thing is a central dental clinic, and from an economic standpoint it is the only thing because of the matter of the supervision of activities of the clinic. It would be a physical impossibility, without a tremendous outlay of money, for the health department of this or any other city to properly supervise scattered dental clinics, dental operators, dental hygienists, physicians and others connected with the various clinics. All of these people, especially the young men, should be properly supervised, if the best results are to be obtained.

Dr. Fones, (closing the discussion): It would require a lengthy reply to answer all the questions that have been asked or to discuss the points that have been made, and I shall not attempt it as the hour is so late. Dr. Robertson is misinformed in some of the statements he has made. For intsance, he said that every child had seven cavities. That is not so. I stated that from the statistics secured in examining the mouths of all the children we found that the average number of cavities per child was seven. Some children would have but one cavity, others two and three cavities, and

still others as many as twenty-four and twenty-six cavities. We have had great variations in numbers, but thru the whole school system there was an average of seven cavities per child. Dr. Robertson said that during the past year there were about 1000 fatal cases of diphtheria and five years ago there were 2500 cases. The death rate in Bridgeport could be summarized in the following table:

Year	Deaths	Death rate per 100,000 population
	DIPHTHERIA.	
1914	44	36.6
1918	32	18.7
	SCARLET FEVER.	
1914	17	14.1
1918	1	0.5
	MEASLES.	
1914	24	20.
1918	7	4.1

I do not say that dental hygiene is entirely responsible for this great reduction in the death rate. If Dr. Robertson had been here and had heard what I said, he would recall the statement I made that dental hygiene is not a penacae for all ailments. I want to say to you, however, that it is a greater force for health and for the prevention of disease than any other one factor in medicine today, and time will prove it. (Applause). It has been asked, "Does the streptococcus viridans produce disease?" In 1916 more people died of heart infection than of tuberculosis, and heart infections are almost invariably streptococcal infections, and the streptococcus viridans plays an important role. Where did these streptococci come from? We find them on the apices of the roots of devital teeth, and I doubt if there are ten people in this hall who can stand up and say they have not a devital tooth. If you have devital teeth, have them X-rayed, and if there is a rarified area over the root of a tooth, in my judgement the tooth should be removed and the socket curetted.

Medical men at the present time are rapidly understanding what focal infection means, and I believe these infections are most serious menace to health that has ever confronted the medical and dental professions. When you have a patient, forty-five or fifty years of age, with one or more focal infections in the mouth, look out, his resistance is running low. Some patients carry these infections until they are sixty or seventy years of age and get by with them because the poisons are neutralized and the resistance has not been materially undermined. This type of infection is so dangerous because it is so subtle. It frequently takes a long time for the thunder to come after the lightning is seen and the storm is still a long way off. After the discovery of apical infection, the resultant systemic disturbance may not occur for five years, or possibly for twenty years, yet it may occur in five months. Altho the presence of the streptococcus viridans has been proven repeatedly on the apices of the roots of devital teeth which showed no rarified areas, for my own satisfaction I have frequently removed such teeth from the mouths of patients suffering from some metastatic infection, and in every case the streptococcus viridans were present in the culture.

With reference to the remarks of Dr. Evans on sugar, McCollum of Johns Hopkins University has shown very conclusively from experiments on animals that all animal fats and vegetable fats do not act the same, and yet in analysis they have practically the same formulae. The same thing obtains in regard to other foods because we are unable to analyze all of the vital properties contained within them. But we do know that we have certain physiological reactions from them that are helpful in one case and are lacking in another. I do not believe that the physiological reaction of all sugar, whether glucose or dextrose, is the same, even tho the formula is the same. The experiments of

Dr. Russell Bunting showing the enamel to be a permeable membrane have thrown new light on the study of dental caries. He has taken an extracted molar tooth free from dental caries and excised the roots at the neck of the tooth. The end of a glass tube was fitted into the exposed pulp chamber of the crown, the joint between the tube and tooth thoroly sealed with balsam. The glass tube was then filled with saline solution and the crown and tube placed in a test tube containing distilled water. He now had saline solution in the inner tube and distilled water in the outer. In a few hours there was a diffusion of the liquids, the saline solution appearing in the outer as well as in the inner tube, showing the enamel to be permeable. He later reversed the liquids, having distilled water in the tube sealed in the tooth and saline solution in the outer tube. The result was the same.

We know that when there is an excess of lactic acid ferment present in the intestine, lactic acid is undoubtedly formed in considerably quantity from excess sugar, and is absorbed as sodium salts. Since I have considered the enamel as a permeable membrane it has occurred to me that in cases where excessive sugar is consumed we might have a chemical attraction of the lactic acid produced on the surface of a tooth for that which is contained in the blood stream or body juices, resulting in the outside or stronger product penetrating the enamel and dentin toward the inside or weaker one, according to the law of osmotic pressure. We know that under the microscope a cross section of carious dentin will show lactic acid penetrating V-shaped toward the pulp chamber as if drawn by some unknown force. Dr. Evans also spoke of the susceptibility to dental caries during pregnancy. I do not believe that this condition would prevail if the prenatal dietary of mothers were regulated. Before birth and for some time thereafter, if the child is nursed at the breast, the mother is called upon to supply not only the normal calcium requirement of her own body, but the high calcium requirement of infancy. It is a well-known fact that unless the calcium intake is increased, the teeth and skeleton of the mother may suffer. Animals when bearing their young do not suffer from dental caries, and undoubtedly their immunity is due to the instinctive selection of foods normal for animal life. As I stated previously, free sugar, the greatest factor in the production of dental caries, is not a natural food. The increased susceptibility to dental caries during pregnancy is, no doubt, the result of two abnormal conditions in the dietary, namely; an insufficient calcium intake, and excessive free sugar consumption.

THE JOURNAL of the NATIONAL DENTAL ASSOCIATION

Entered as second-class matter, March 22, 1915, at the Post Office at Huntington, Indiana, under the Act of August 24, 1912. Published Monthly.

Editor and General Manager,
OTTO U. KING, D. D. S., 127 N. Dearborn St., Chicago, Illinois.
Associate Editors,
THOMAS P. HINMAN, D. D. S., Atlanta, Ga.
HARVEY J. BURKHART, D. D. S., Rochester, N. Y.
THOMAS B. HARTZELL, D. M. D., M. D., Minneapolis, Minn.

All expressions of opinion and all statements of supposed facts are published on the authority of the writer over whose signature they appear and are not to be regarded as expressing the views of the National Dental Association, unless such statements or opinions have been adopted by vote of the Association.

SUBSCRIPTION included in the annual membership dues.

SUBSCRIPTION, $2.00 a year, in advance, to non-members, living in all parts of the United States or its possessions. Canada, $2.50. Foreign countries, $3.00. Single copies, 20 cents.

ADVERTISEMENTS accepted only from reliable firms. Fraudulent and misleading advertisements barred.

IN CHANGES OF ADDRESS both the old and new address must be given.

JOURNALS are not sent beyond the subscription period.

ORIGINAL ARTICLES, items of news and matter of interest to the profession are welcome. Request for reprints should be made at the time of forwarding articles.

VOL. 7 JUNE, 1920 NO. 6

Editorial Department.

THE DELAY IN THE DELIVERY OF THE JOURNAL AND THE "PAPER SHORTAGE."

The postal situation is well known by all of our readers. Matter sent by parcel post, and periodicals, have been meeting with lengthening delays in transmission. More recently delivery of even first-class mail has been delayed. This item is published to explain delay which may occur in the receipt of The Journal. It is hoped that our readers will allow for the present difficulty and not request additional copies

until sufficient time has elapsed to make sure that missing copies will not be received.

It is unnecessary to remind our readers that periodical publishers are at present seriously handicapped by the paper shortage. It has been the rule of The Journal to keep a three to six months' supply of paper on hand in order to be ready for emergencies, but, because of freight difficulties, this reserve has gradually dwindled almost to the vanishing point. Somewhere between the paper mills and our publishing office there are several tons of paper en route to The Journal. This announcement is made so that our readers may have explained beforehand any contingency which may occur; it may be The Journal will be sent out in a thin white paper cover; it may be necessary to temporarily reduce the number of pages; there is a bare possibility that some issue may be seriously delayed.

PROPOSED TAX ON MATERIAL USED IN THE HEALING ARTS.

The health of the body politic is its most valuable asset, and any influence which tends to reduce that asset must be classified as malignant and injurious. The Bacharach Bill, known as H. R. 7785, introduced in Congress at the insistent demand of a small but influential body made up from representatives of dental manufacturers and jobbers in the United States is such an influence. If this pernicious legislation is permitted to pass and become a law, it will add one more burden to the already great expense under which the American people are groaning. There is no good reason why this bill should pass, and there are many reasons why it should not pass.

In the first place it is an injustice to heap upon dentists, or upon patients who are in need of dental service, an additional expenditure of

> "forty-five per cent on philosophical, scientific and laboratory apparatus, utensils, instruments and appliances, and parts thereof, finished or unfinished, and on preparations, including bottles and boxes containing the same, not otherwise provided for;"

also that

> "all materials composed wholly or in part, of steel, copper, brass, nickel or aluminum, whether finished or unfinished, will have an additional duty of sixty per cent, ad valorem;"

as provided in this bill.

All optical glass for the correction of faulty vision must also bear

this tax in face of the fact that there are countless numbers of the children of the poor in our schools who are sadly in need of corrective optical measures, and upon whom this tax will fall as a positive injustice.

In the next place, this protection to the dental trade interests is not necessary. The public and our legislators are doubtless unaware that the more powerful firms among our manufacturers export, roughly speaking, thirty per cent of their manufactured goods outside of the United States. During the late war one firm alone secured ninety-five per cent of the bids for dental goods of American manufacture in Canada. All the great dental manufacturing corporations have branch houses and agencies in Europe, and are able to freely compete with European manufacturers on a profitable basis. In view of this fact, they do not need this protection of sixty per cent.

Then again, from the Government's point of view, there should be little incentive to pass such a bill. The revenue obtained from a sixty per cent tax, altho falling heavily upon dentists and their patients, would, when measured in terms of an income to the Government, be merely trivial, so that it would work a hardship on the many to the advantage of a few, and not bring the Government any appreciable return.

The big outstanding fact that we, as dentists, must bear in mind is that every advance in duty upon imported articles is taken advantage of by the manufacturers to increase their selling price to the American consumer in exact ratio to the import duty. So that the small amount of revenue raised by the tax has little to do with its net effect—which is to create a great burden in cost for the dentist which he, in turn, must pass on to the American public.

On March 15th, at the Bellevue-Stratford Hotel in Philadelphia, an organization of dental manufacturers requested that every manufacturer and jobber in the United States bring insistent demand upon their senators to push this bill thru "while the going was good." The dental profession has not been awake to this menace, but now that attention is called to it, every practising dentist and dental laboratory worker (numbering over 50,000) should protest as a man against this legislation. We should approach our senators individually, and we should protest to them collectively thru our organizations. We should not allow a moment to elapse until our protests are registered and we should concentrate on our senators, because this bill has already

passed the Lower House, and it has also been recommended to pass the Senate by its Finance Committee. If our senators realized that they were putting a burden on the sick, on the afflicted, the lame, the halt and the blind, a burden masquerading under the righteous purpose of creating revenue for the Government, which revenue will necessarily be small, they certainly would amend this bill to relieve the public of any further tax on its health activities. The need for important action is so great that no further facts need be supplied to the readers of this journal, except to repeat that the Bill is known in the 66th Congress as H. R. 7785, introduced by Representative Bacharach at the request of a small select body of manufacturers with the hope that they would slip it thru before we awakened to the situation. These manufacturers comprise the richest, most powerful group engaged in this type of commerce in the world, and have no need to protect their gigantic industry. This bill is liable to be called up and voted upon in the Senate at any time. Hence the need for immediate action. Write your senators today, protesting against this bill. Take as your slogan "No Duty or Government Tax on Materials Used to Protect the Public Health."

LISTEN, AMERICA, LISTEN!

One day the heavy finger of God will retrace anew across the face of Heaven that ancient and immutable command "BY THE SWEAT OF THY BROW SHALT THOU EAT BREAD," and again will men bend their backs and go humbly down into the pits to perform the menial tasks of Humanity.—Roycroft.

The Boston Session

National Dental Association, Twenty-fourth Annual Session, Boston, Mass., August 23-27, 1920

PRELIMINARY PROGRAM OF THE SCIENTIFIC SESSIONS.

TUESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Operative Dentistry, Materia Medica and Therapeutics.

(Talbot Hall, Second Floor, Mechanics Building.)

OFFICERS OF SECTION.

Arthur D. Black, Chairman.....Chicago, Ill.
122 So. Michigan Ave.

Harold S. Smith, Vice-Chairman.....Chicago, Ill.
1010 Belmont Ave.

G. A. Milner, Secretary.....Aiken, S. C.

It is the aim of this section to present six subjects in the most thoro manner by papers and unit clinics. Two papers will be read each morning and the unit clinic demonstrations of the afternoon will be under the direction of the essayists of the morning and definitely coordinated with the papers. In other words, the clinics will exemplify by demonstration the technical points presented in the papers. The following is the list of titles and the names of the essayists:

"Cavity Preparation and New Points in the Technic of Placing Gold Foil Fillings."
By C. W. Farrington....Boston, Mass.

"Report of Studies and the Technic for Gold Inlays."
By R. E. Blackwell.....Chicago, Ill.

TUESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Prosthetic Dentistry and Crown and Bridge Work.

Part I—Denture Section,

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Part II—Crown and Bridge Section,

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

OFFICERS OF SECTION.

M. M. House, Chairman.....Indianapolis, Ind.
1005 Hume-Mansur Bldg.

Norman B. Nesbett, Vice-Chairman..Boston, Mass.
125 Marlborough St.

E. F. Tinker, Secretary.....Minneapolis, Minn.
307 Donaldson Bldg.

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

"Surgical Preparation of the Mouth for Early Denture Restoration."
By Carl D. Lucas....Indianapolis, Ind.

"Some Fundamental Things in the Aesthetics of Dental Prosthesis."
By J. Leon Williams..New York City.

"Cast Full Upper Denture with Special Attention Given to Anatomical Form and Physiological Function of the Soft Tissues."
By Claude J. Stansbery.....
.....Seattle, Wash.

Massachusetts Charitable Mechanics Association Building, Boston, Mass. Home of the National Dental Association Meeting, August 23-27, 1920.

Massachusetts Charitable Mechanics Association Building, Boston, Mass. Home of the National Dental Association Meeting, August 23-27, 1920.

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

"Crown and Bridge-work From a New Point of View."
By Forrest H. Orton....St. Paul, Minn.

"Color and Characteristics of the Teeth."
By William D. Vehe.....Minneapolis, Minn.

"Modern Technic of Crown and Bridge-work, Dwelling Especially on Prophylactic Principles."
By William H. Elliott....Detroit, Mich.

TUESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Oral Surgery, Exodontia and Anesthesia.

(Lightwell Hall, Second Floor, Mechanics Building.)

OFFICERS OF SECTION.

Chalmers J. Lyons, Chairman...Ann Arbor, Mich.
John W. Seybold, Vice-Chairman....Denver, Colo. 304 Mack Bldg.
Wm. L. Shearer, Secretary.....Omaha, Nebr. City Nat'l Bank Bldg.

Local Anesthesia.

"Some Considerations of the Anatomy Involved in Conductive Anesthesia."
By W. A. Cook.....Detroit, Mich.

"Further Advances in Local Anesthesia."
By S. L. Silverman.....Atlanta, Ga.

"Action of Hypotonic, Isotonic and Hypertonic Solutions on Blood and Tissue Cells of Living Animals."
By Ira G. Nichols.....Mandan, N. D.

"Untoward Sequella Following in the Wake of Conductive Anesthesia."
By Herbert A. Potts.....Chicago, Ill.

TUESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Orthodontia and Periodontia.

(Foyer Hall, Second Floor, Mechanics Building.)

OFFICERS OF SECTION.

Harry E. Kelsey, Chairman.....Baltimore, Md. 833 Park Ave.
Paul R. Stillman, Vice-Chairman..New York, N. Y. 52 Vanderbilt Ave.
W. C. Fisher, Secretary.....New York, N. Y. 501 Fifth Ave.

"Case Management for Suppurative Periodontoclasia."
By Jules J. Sarrazin.....New Orleans, La.

"Psychology in Its Relation to Practice."
By Alfred P. Rogers....Boston, Mass.

"Some Phases of the Treatment of Suppurative Periodontoclasia."
By Ivan R. Cottrell..Rochester, N. Y.

Explanation of the Work Involved in the "Dissections Showing Muscles of Mastication." Prepared by the Orthodontic Department of Tufts College Dental School.
By A. LeRoy Johnson..Boston, Mass.

TUESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Organization, Mouth Hygiene and Public Service.

(Men's Parlor, Paul Revere Hall, Second Floor, Mechanics Building.)

OFFICERS OF SECTION.

Burton Lee Thorpe, Chairman.....St. Louis, Mo. 415 Metropolitan Bldg.
E. L. Pettibone, Vice-Chairman....Cleveland, O. 6503 Detroit Ave.
E. R. Swank, Secretary.....Des Moines, Iowa. 605 Citizens Bank Bldg.

The talent for this section has been especially selected to present the proper subjects in a manner that should terminate in an organization that will meet the demand of the people as well as the profession for education in preventive dentistry.

Preventive dentistry is all important and covers a vast field touching upon every phase of our profession and extending into the deep realms of general health. No one can practice true dentistry in any one of its branches without knowledge of the fundamentals of Mouth Hygiene and real results are not obtained without organization.

All papers to be followed by a clinic in the afternoon.

"Standardizing the Technic of Surgical Prophylaxis."
By Justin D. Towner.....Memphis, Tenn.
Discussed by
Paul R. Stillman.....New York City.
Jules J. Sarrazin....New Orleans, La.
De Lan Kinney.....New York City.

"Diet in Relation to Oral Hygiene."
By Wallace Seccombe.....Toronto, Canada.
Discussed by
Percy R. Howe.....Boston, Mass.
Thaddeus P. Hyatt....New York City.
Harold DeWitt Cross....Boston, Mass.

TUESDAY MORNING.

9:00 A. M. to 11:30 A. M.

History, Physiology, Pathology, Bacteriology and Chemistry. (Research).

(Paul Revere Hall, Second Floor, Mechanics Building.)

OFFICERS OF SECTION.

Weston A. Price, Chairman.....Cleveland, O.
8803 Euclid Ave.

R. H. Volland, Vice-Chairman...Iowa City, Iowa.

Harris R. C. Wilson, Secretary.....Cleveland, O.
701 Schofield Bldg.

General Topic of Section—"The Management of Pulpless Teeth."

Seminar on "Recent Advancement in Clinical and Diagnostic Methods."

"Limitations of the Roentgen Rays in Dental Diagnosis."
By Edwin J. Nestler.....Tenafly, N. J.

"Etiological and Bacteriological Studies"—
(a) The Etiology of Glomerulo Nephritis.
By E. T. Bell and Thomas B. Hartzell.....Minneapolis, Minn
(b) The Nature of Bacterial Proteins.
(c) Surface Tension Phenomena in Bacteriologic Investigation.
(d) The Metabolism of the Inorganic Salts by Bacteria."
By W. P. Larson and Thomas B. Hartzell.....Minneapolis, Minn.

"Experiments Showing the Effect of Diet Upon the Teeth and Jaws."
By Percy R. Howe.....Boston, Mass.

"Studies of Susceptibility and Immunity Factors in Relation to Dental Diagnosis."
By Weston A. Price.....Cleveland, O.

TUESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Operative Dentistry, Materia Medica and Therapeutics.

(Talbot Hall, Second Floor, Mechanics Building.)

Six groups will present unit clinics demonstrating technical points presented in the papers of the morning; three groups will present cavity preparation and gold filling technic, the other three every step in the technic for gold inlays.

TUESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Prosthetic Dentistry and Crown and Bridge Work.

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Clinics:

"Modern Methods of Teaching Dental Prosthetics."
By I. Lester Furnas.....Indianapolis, Ind.

"....."
By George P. Brenner.....Milwaukee, Wis.

"Aesthetic Dentures."
By V. C. Smedley.....Denver, Colo.

"Partial Dentures."
By Robert White Blake.....Indianapolis, Ind.

"Impression Taking of Edentulous Mouths."
By Ira G. Nichols.....Mandan, N. D.

"Surgical Preparation of the Mouth for Early Denture Restoration."
By Carl D. Lucas, Indianapolis, Ind.

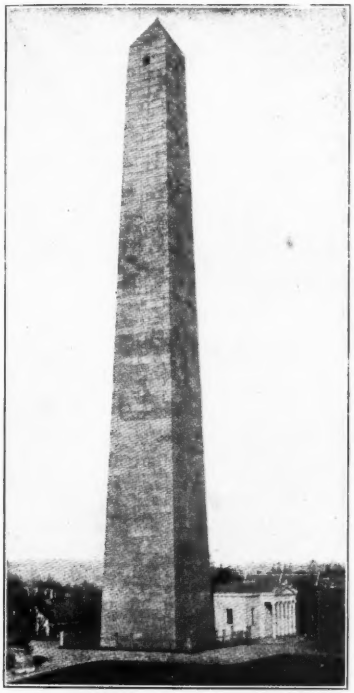
"Some Fundamental Things in the Aesthetics of Dental Prosthesis."
By J. Leon Williams, New York City.

"Cast Full Upper Denture With Special Attention Given to Anatomical Form and Physiological Function of Soft Tissues."
By Claude J. Stansbery.....Seattle, Wash.

"Considering Some of the Detail When Securing the Correct Relation of the Mandible to the Maxilla in Edentulous Cases."
By Charles Lane.....Detroit, Mich.

"Exhibition of Models and Explanation of Difficult Cases."
By M. J. Holroyd.....Pittsburgh, Pa.

"The Intelligent Use of Harmony and Disharmony in the Selection of Artificial Teeth."
By George Wood Clapp.....New York City.



Bunker Hill Monument.

Captain Parker.

Orchard House.

Harvard Gate.

"The Continuous Gum Denture."
By Dayton Dunbar Campbell.....
.....Kansas City, Mo.

"Important Steps in the Construction of Continuous Gum Dentures."
By W. Clyde McCleland.....
.....Kansas City, Mo.

"Methods Affording Denture Service Immediately Following Extraction."
By Robert R. Gillis....Hammond, Ind.

"Occlusion and Articulation."
By John B. LaDue.....Mattoon, Ill.

"Practicality as Applied to Full Lower Dentures."
By Elbert B. Owen.....St. Louis, Mo.

"The How and the Wherefore of Impressions for Artificial Dentures."
By John H. Hospers.....Chicago, Ill.

"Exhibit Illustrating Modern Technic in Construction of Full Upper and Lower Dentures."
By Alex H. Paterson....Baltimore, Md.

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Clinics:

"Crown and Bridge Work From a New Point of View."
By Forrest H. Orton....St. Paul, Minn.

"Color and Characteristics of the Teeth."
By William D. Vehe.....
.....Minneapolis, Minn.

"Modern Technic of Crown and Bridge Work, Dwelling Especially on Prophylactic Principles."
By William H. Elliott....Detroit, Mich.

"Bridge Work and Other Appliances in Periodontia Cases."
By Howard T. Stewart.....
.....New York City.

TUESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Oral Surgery, Exodontia and Anesthesia.

(Lightwell Hall, Second Floor, Mechanics Bldg.)

Local Anesthesia.

Clinics:

"Some Considerations of the Anatomy Involved in Conductive Anesthesia."
By W. A. Cook.....Detroit, Mich.

"Further Advances in Local Anesthesia."
By S. L. Silverman.....Atlanta, Ga.

"Action of Hypotonic, Isotonic and Hypertonic Solutions on Blood and Tissue Cells of Living Animals."
By Ira G. Nichols.....Mandan, N. D.

"Untoward Sequella Following in the Wake of Conductive Anesthesia."
By Herbert A. Potts.....Chicago, Ill.

"Sections of Mandible and Maxilla."
By Wallace L. Ohl.....Pittsburgh, Pa.

"Nerve Supply of Maxilla in Relationship to Conductive Anesthesia."
By D. P. Snyder.....Columbus, O.

"Important Points in Conductive Anesthesia."
By Theodor Blum.....New York City.

"....."
By B. Lucien Brun.....Baltimore, Md.

"Faulty Technic in Conductive Anesthesia."
By Wm. A. Gobie.....Boston, Mass.

"Block Anesthesia in Oral Surgery and Dentistry." (Film.)
By Arthur E. Smith.....Chicago, Ill.

"....." (Film.)
By Howard C. Miller.....Chicago, Ill.

TUESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Orthodontia and Periodontia.

(Foyer Hall, Second Floor, Mechanics Bldg.)

Clinics:

Clinical presentation of their subjects by the essayists of the morning session.

TUESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

History, Physiology, Pathology, Bacteriology and Chemistry (Research).

(Paul Revere Hall, Second Floor, Mechanics Building.)

Progressive Clinics:

"Demonstration of Roentgen Ray Limitations and Practical Application of the Van Woert Localizer."
By Edwin J. Nestler.....Tenafly, N. J.

"Exhibition of Pathological Specimens and their Interpretation."
By Thomas B. Hartzell.....
.....Minneapolis, Minn.

"Practical Application of Serology in Dental Practice."
By .....

"Demonstration of the Relationship Between Variations in Oral Reactions to Focal Infections and Systemic Susceptibility."
By Weston A. Price.....Cleveland, O.

WEDNESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Operative Dentistry, Materia Medica and Therapeutics.

(Talbot Hall, Second Floor, Mechanics Bldg.)

"Pulp Treatment and Root Canal Technic With Special Reference to the Prevention of Apical Infection."
By Edgar D. Coolidge.....Chicago, Ill.

"Radiography in Relation to Root Filling Technic and to Apical and Peridental Infections."
By Kurt H. Thoma.....Boston, Mass.

WEDNESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Prosthetic Dentistry and Crown and Bridge Work.

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

"Need and Means of Educating Laboratory Assistants."
By Victor H. Sears.....Chicago, Ill.

"The Colleges' Responsibility in Improving the Practice of Denture Prosthesis."
By W. F. Lasby....Minneapolis, Minn.

"Deep Bite (45 degree angle) Teeth Most Efficient for Restoring Edentulous Cases."
By Rupert E. Hall.....Chicago, Ill.

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

"The Porcelain Jacket Crown and Its Value in Pulp Conservation."
By C. A. Nixon.....Valparaiso, Ind.

"Classification of Teeth as a Guiding Factor in the Correct Preparation for Porcelain Jacket Crowns."
By Hugh Avary....San Francisco, Cal.

"Some New Phases and Developments in Porcelain Jacket Crowns."
By N. W. Goodman.....
.....Los Angeles, Cal.

"Vital Points in Securing Artistic and Ideal Restoration of Porcelain Jacket Crowns."
By George A. Thompson.....
.....Chicago, Ill.

WEDNESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Oral Surgery, Exodontia and Anesthesia.

(Lightwell Hall, Second Floor, Mechanics Bldg.)

Roentgenology.

"The Use of the Roentgen Ray for Diagnosis of Surgical Diseases in the Mouth."
By Kurt H. Thoma.....Boston, Mass.

"Radiographic Diagnosis: Use and Abuse."
By J. C. Brownlie.....Denver, Colo.

"Interpretation of Dental Radiographs."
By E. A. Kinley.....Boston, Mass.

WEDNESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Orthodontia and Peridontia.

(Foyer Hall, Second Floor, Mechanics Bldg.)

"Orthodontic Appliances; Their use and Abuse."
By John V. Mershon.....
.....Philadelphia, Pa.

"Original Method and Instruments for the Carving of Orthodontic Models."
By Clinton C. Howard....Atlanta, Ga.

Paper on Periodontia.
By Thaddeus P. Hyatt.....
.....New York, N. Y.

"Diagnosis of Periodontal Diseases."
By Russell W. Bunting.....
.....Ann Arbor, Mich.

"Mechanics of Mastication in Relation to the Health of Periodontium."
By Isador Hirschfeld.....
.....New York, N. Y.

WEDNESDAY MORNING.

9:00 A. M. to 11:30 A. M.

Organization, Mouth Hygiene and Public Service.

(Men's Parlor, Paul Revere Hall, Second Floor, Mechanics Building.)

"The Question of Dentifrices."
By C. Edmund Kells.....New Orleans, La.

Discussed by
J. D. Patterson.....Kansas City, Mo.
G. Walter Dittmar.....Chicago, Ill.
Russell W. Bunting.....Ann Arbor, Mich.

"The Oral Hygienist."
By Albert H. Stevenson.....New York City.

Discussed by
Alfred C. Fones.....Bridgeport, Conn.
Thomas J. Barrett, Worcester, Mass.
C. N. Johnson.....Chicago, Ill.

WEDNESDAY MORNING.

9:00 A. M. to 11:30 A. M.

History, Physiology, Pathology, Bacteriology and Chemistry (Research).

(Paul Revere Hall, Second Floor, Mechanics Building.)

Seminar on "Recent Studies of Methods for Root Treatment and Root Filling."

"Studies on the Histo-Pathological Changes Produced in the Supporting Structures by Tooth Medications."
By Guthrie McConnell.
Alphonse Lang.
Linwood G. Grace.
Research Institute of the National Dental Association, Cleveland, Ohio.

"Report on Cases Treated by the Howe Formula in the Forsyth Dental Infirmary."
By Harold DeWitt Cross, Director.....Boston, Mass.

"A Study of the Efficiency of Tooth Medications and Root Fillings."
By Linwood G. Grace.
Florence Highberger.
Research Institute of the National Dental Association, Cleveland, Ohio.

WEDNESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Operative Dentistry, Materia Medica and Therapeutics.

(Talbot Hall, Second Floor, Mechanics Bldg.)

Clinics:

Six groups of unit clinics will demonstrate the papers of the morning. For the paper on root-canal technic every step of simple plans of asepsis, root-canal enlargement, measurement of canals and apical foramen and the placing of root fillings will be demonstrated in the most practical way. For the paper on radiography, films will be shown in illuminating boxes illustrating the advantages of the X-ray in making good root-canal fillings and special attention will also be devoted to the interpretation of radiographs of bone conditions.

WEDNESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Prosthetic Dentistry and Crown and Bridge-work.

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Lecture-Clinic:

"Mandibular Movements and the Forms of Bicuspids and Molars Necessitated Thereby."
By Alfred Gysi....Zurich, Switzerland.

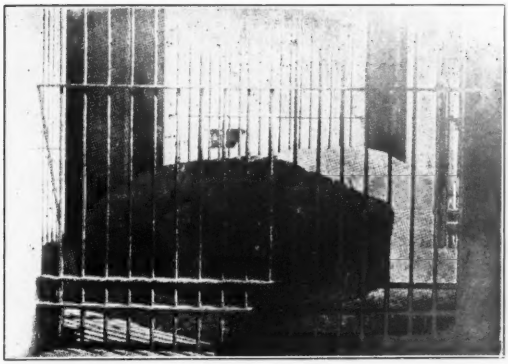
Discussion.

Part II—Crown and Bridge Section.

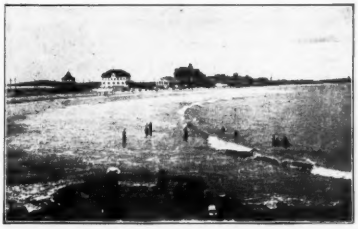
(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

"The Porcelain Jacket Crown and Its Value in Pulp Conservation."
By C. A. Nixon.....Valparaiso, Ind.

"Classification of Teeth as a Guiding Factor in the Correct Preparation for Porcelain Jacket Crowns."
By Hugh Avary....San Francisco, Cal.



Plymouth Rock.



Nantasket Beach.

Washington Elm, Salem, Mass.

Forsyth Dental Infirmary for Children.

"Some New Phases and Developments in Porcelain Jacket Crowns."
By N. W. Goodman.....Los Angeles, Cal.

"Vital Points in Securing Artistic and Ideal Restoration of Porcelain Jacket Crowns."
By George A. Thompson.....Chicago, Ill.

WEDNESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Oral Surgery, Exodontia and Anesthesia.

(Lightwell Hall, Second Floor, Mechanics Bldg.)

Roentgenology.

Clinics:

"The Use of the Roentgen Ray for Diagnosis of Surgical Diseases of the Mouth."
By Kurt H. Thoma.....Boston, Mass.

"Radiographic Diagnosis: Use and Abuse."
By J. C. Brownlie.....Denver, Colo.

"The Use and Abuse of the Radiograph in Dental Diagnosis."
By John F. Biddle.....Pittsburgh, Pa.

"Advantages and Disadvantages of the Radiograph in Oral Surgery and Exodontia."
By W. R. J. Wallace, Rochester, N. Y.

"Radiographic Evidence in Oral Surgery."
By Hugh W. McMillen.....Roseville, Ill.

"Radiographic Evidence in Oral Surgery."
By Howard A. Reid.....Cincinnati, O.

"Radiography Insufficiency."
By Robert L. Eller.....Washington, D. C.

"Reflex Pains with an Obscure Etiology as Depicted by the X-ray."
By Thomas B. Wade.....Philadelphia, Pa.

"Interpretation of Dental Radiographs."
By E. A. Kinley.....Boston, Mass.

WEDNESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Orthodontia and Periodontia.

(Foyer Hall, Second Floor, Mechanics Bldg.)

Clinical presentation of their subjects by the essayists of the morning session.

WEDNESDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

History, Physiology, Pathology, Bacteriology and Chemistry (Research).

(Paul Revere Hall, Second Floor, Mechanics Building.)

Progressive Clinics:

"Practical Demonstration of Methods and Results of the Howe Treatment as Made on Children in the Forsyth Dental Infirmary."
By Percy R. Howe and Demonstrators.....Boston, Mass.

"Interpretation of Experiments on Root Medication."
By Linwood G. Grace.....Cleveland, O.

"A Demonstration of Some Factors Showing Relative Efficiency of Several Root Filling Methods."
By .....

THURSDAY MORNING.

9:00 A. M. to 11:30 A. M.

Operative Dentistry, Materia Medica and Therapeutics.

(Talbot Hall, Second Floor, Mechanics Bldg.)

"Causes of Infections of the Gingivae and Their Relation to Peridental Infections."
By H. E. Friesell.....Pittsburgh, Pa.

"Histological and Pathological Studies of the Peridental Membrane, Cementum and Dentin with Particular Reference to Infections."
By W. G. Skillen.....Chicago, Ill.

THURSDAY MORNING.

9:00 A. M. to 11:30 A. M.

Prosthetic Dentistry and Crown and Bridge-work.

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

"The Cast Gold Base."
By Harry E. Holaday.....Kansas City, Mo.

"Fundamental Laws Governing the Construction of Partial Dentures and the Discussion of a Technic Which Will Meet the Requirements."
By E. E. Bailey.....Denver, Colo.

"Gold Partial Denture Construction and Attachments Best Suited for Various Cases."
By J. A. Graham.....
.....San Francisco, Cal.

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

"Standardized Technic for Making Wax Patterns."
By T. W. Maves....Minneapolis, Minn.

"A 'Different' Casting Technic."
By K. W. Knapp....Des Moines, Iowa.

"Modern Trend in Bridge Work."
By Morton H. Mortonson.....
.....Milwaukee, Wis.

"A Phase of Crown and Bridgework."
By Edwin R. Hart.....St. Louis, Mo.

THURSDAY MORNING.

9:00 A. M. to 11:30 A. M.

Oral Surgery, Eoxdontia and Anesthesia.

(Lightwell Hall, Second Floor, Mechanics Bldg.)

Dental Diagnosis.

"The Necessity of a Broader Conception of the Term Dental Diagnosis."
By D. M. Graham.....Detroit, Mich.

"Omissions and Commissions in Dental Diagnosis."
By Major Joseph D. Eby, Walter Reed Hospital.....
.....Washington, D. C.

"The Alveolar Radiogram—What It Tells."
By Joseph A. Pollia.....
.....San Francisco, Cal.

THURSDAY MORNING.

9:00 A. M. to 11:30 A. M.

Orthodontia and Periodontia.

(Foyer Hall, Second Floor, Mechanics Bldg.)

Paper on Periodontia.
By A. W. Ward.....
.....San Francisco, Cal.

"Impressions and Models and the Study of Occlusion, With Lantern Slides."
By Martin Dewey.....Chicago, Ill.

"Artificial Occlusal Restorations."
By James Kendall Burgess.....
.....New York, N. Y.

"Impressions, Models and the Study of Occlusion."
By Oren A. Oliver....Nashville, Tenn.

Paper on Periodontia.
By Arthur Charles Hamm.....
.....Denver, Colo.

THURSDAY MORNING.

9:00 A. M. to 11:30 A. M.

Organization, Mouth Hygiene and Public Service.

(Men's Parlor, Paul Revere Hall, Second Floor, Mechanics Building.)

"Institutional Dentistry."
By Frederick A. Keyes.....
.....Boston, Mass.

Discussed by
Harvey J. Burkhart, Rochester, N. Y.
Carl D. Lucas.....Indianapolis, Ind.
Don M. Gallie.....Chicago, Ill.

"What Shall We Tell the People?"
By Rea Proctor McGee.....
.....Pittsburgh, Pa.

Discussed by
Louis Meisburger.....Buffalo, N. Y.
Major L. G. Mitchell.....
.....Washington, D. C.
Robert D. McIntosh.....Joplin, Mo.

"The Des Moines Tooth Brush Clinic and Lecture."
C. M. Kennedy.....Des Moines, Iowa.
W. J. Charters.....Des Moines, Iowa.
W. J. Cameron.....Des Moines, Iowa.

THURSDAY MORNING.

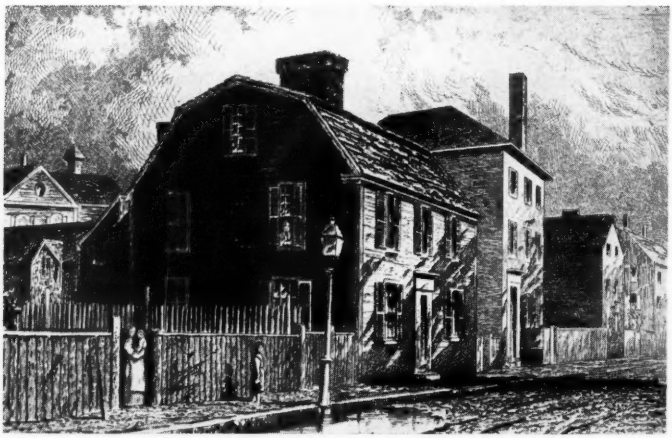
9:00 A. M. to 11:30 A. M.

History, Physiology, Pathology, Bacteriology and Chemistry (Research).

(Paul Revere Hall, Second Floor, Mechanics Building.)

Seminar on "Structural Changes."

"Cementum Changes, Their Causes and Effects."
By Harold K. Box.....
.....Toronto, Canada.



Hawthorne's Birthplace.

The Turner-Ingersoll House, Known as the "House of the Seven Gables."

(a) "Changes in the Root End Due to Periapical Infection."

(b) "Demonstration of Bacteria in Root Ends Surrounded by Granulomas."

By Kurt H. Thoma.....Boston, Mass.
By Leonard D. Nathan.....Boston, Mass.

"Histology of the Cementum as Related to Pulp Canal Surgery."
By W. Clyde Davis.....Lincoln, Nebr.

"The Dental Granuloma and Peridental Membrane Changes."
By Guthrie McConnell and Alphonse Lang—Research Institute of the National Dental Association.....Cleveland, Ohio.

THURSDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Operative Dentistry, Materia Medica and Therapeutics.

(Talbot Hall, Second Floor, Mechanics Bldg.)

Clinics:

There will be six groups of unit clinics demonstrating the papers of the morning. For the paper on gingivitis, the various conditions leading to infections of the gingivae will be demonstrated on large plaster models, together with the technic which should be employed to eliminate or prevent such infections. The special feature of this demonstration will be the possibility of preventing a large percentage of peridental disease. For the paper on infections of the peridental membrane the demonstrations will consist of photomicrographs of recent studies of the peridental membrane cementum and dentin made by new laboratory methods. These will serve to give a clear understanding of the pathological changes which occur in chronic infections of these tissues. Technic of new methods of treatment will also be demonstrated.

THURSDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Prosthetic Dentistry and Crown and Bridge Work.

Part I—Denture Section,

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Part II—Crown and Bridge Section,

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Part I—Denture Section.

(Paul Revere Banquet Hall, Second Floor, Mechanics Building.)

Clinics:

"Device for Remounting and Grinding Artificial Teeth for the Correction of Inaccuracies in Occlusion and Articulation."
By A. K. Parks.....Montgomery, Ala.

"Need and Means of Educating Laboratory Assistants."
By Victor H. Sears.....Chicago, Ill.

"The Colleges' Responsibility in Improving the Practice of Denture Prosthesis."
By W. F. Lasby.....Minneapolis, Minn.

"Deep Bite (45 degree angle) Teeth Most Efficient for Restoring Edentulous Cases."
By Rupert E. Hall.....Chicago, Ill.

"The Cast Gold Base."
By Harry E. Holaday.....Kansas City, Mo.

"Fundamental Laws Governing the Construction of Partial Dentures and the Discussion of a Technic Which Will Meet the Requirements."
By E. E. Bailey.....Denver, Col.

"Gold Partial Denture Construction and Attachments Best Suited for Various Cases."
By J. A. Graham, San Francisco, Cal.

"Occlusion and Articulation With Deep Cusp Posteriors."
By Walter E. Beyer.....Indianapolis, Ind.

"A Scrap Book as an Aid to the Prosthodontist."
By Harry J. Horner.....Pittsburgh, Pa.

"Demonstration of the Monson Spherical Theory of Articulation."
By R. R. Blanchard....Springfield, Ill.

"Deafness as Influenced by Malposition of the Jaws."
By Walter H. Wright, Pittsburgh, Pa.

Part II—Crown and Bridge Section.

(Reception Room, Paul Revere Hall, Second Floor, Mechanics Building.)

Clinics:

"Standardized Technic for Making Wax Patterns."
By T. W. Maves....Minneapolis, Minn.

"Some Technic Applicable to Any System of Bridge-work, Including:
(a) Impression Taking.
(b) Securing and Handling Occlusion Waxes."
By James Kendall Burgess.....
.....New York, N. Y.

"Modern Trend in Bridge-work."
By James C. and Morton H. Mortonson .....Milwaukee, Wis.

"A Phase of Crown and Bridge Work."
By Edwin R. Hart.....St. Louis, Mo.

"A 'Different' Casting Technic."
By K. W. Knapp.....Des Moines, Ia.

THURSDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Oral Surgery, Exodontia and Anesthesia.

(Lightwell Hall, Second Floor, Mechanics Bldg.)

Dental Diagnosis.

Clinics:

"Dental Diagnosis."
By D. M. Graham.....Detroit, Mich.

"Practical Examination."
By J. L. Austin....Chattanooga, Tenn.

"The Electric Current in Diagnosis."
By C. W. Marriott.....Atlanta, Ga.

"Complete Mouth Examination."
By Carl D. Lucas....Indianapolis, Ind.

"Clinical Findings with X-rays."
By Clifford E. Rose.....Buffalo, N. Y.

"Diagnosing and Charting Peridontal Lesions."
By J. Oppie McCall.....Buffalo, N. Y.

"The Use of the Faradic and Galvanic Currents in Dental Diagnosis."
By Wilber S. Benedict.....
.....Washington, D. C.

Surgical Clinics:

"Local versus General Anesthesia Used in Oral Surgery Operations." (Massachusetts Homeopathic Hospital.)
By R. H. Norton.....Boston, Mass.

"Cases as Available."
By LeRoy M. S. Miner, Boston, Mass.

"Cases as Available."
By Kurt H. Thoma.....Boston, Mass.

1. "Maxillary Sinusitis Operating Thru the Canine Fossa."
2. "Alveolectomy — The Surgical Treatment for Pyorrhea Alveolaris."
3. "Neurectomy—An Intraoral Resection of the Second or Third Division of the Fifth Nerve." (Carney Hospital, South Boston, Mass.)

By Charles M. Proctor, Boston, Mass.

"Demonstration of Technic on the Cadaver, and Exhibition of Collection of Specimens Showing Range of Variability in Form of Sinuses."

"Conservative Surgery of the Maxillary Sinus from the Dental View-Point."
(Massachusetts General Hospital.)
By George H. Wright....Boston, Mass.

"Omissions and Commissions in Dental Diagnosis."
By Major Joseph D. Eby, Walter Reed General Hospital.....
.....Washington, D. C.

"Brief and Efficient Methods of Mouth Examination and Diagnosis."
By H. Hayward Street.....
.....Washington, D. C.

"The Alveolar Radiograph—What It Tells."
By Joseph A. Pollia.....
.....San Francisco, Cal.

"....."
By Rea Proctor McGee.....
.....Pittsburgh, Pa.

THURSDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

Orthodontia and Periodontia.

(Foyer Hall, Second Floor, Mechanics Bldg.)

Clinical presentation of their subjects by essayists of the morning session.

THURSDAY AFTERNOON.

1:30 P. M. to 4:00 P. M.

History, Physiology, Pathology, Bacteriology and Chemistry (Research.)

(Paul Revere Hall, Second Floor, Mechanics Building.)

Progressive Clinics:

"Practical Interpretation of Cementum Changes and Demonstration of the Normal Communication from the Dentin Thru the Cementum, and Its Significance in Health and Disease."
By Harold K. Box....Toronto, Canada.

"Detailed Interpretation of Apical Changes Accompanying Periapical Infection."
By Kurt H. Thoma.....Boston, Mass.
Leonard D. Nathan..Boston, Miss.

"Pulp Canal Surgery From a Histo-Pathological Standpoint."
By W. Clyde Davis.....Lincoln, Nebr.

"Pathological Conditions Which Indicate Curettements Following Extractions."
By .....

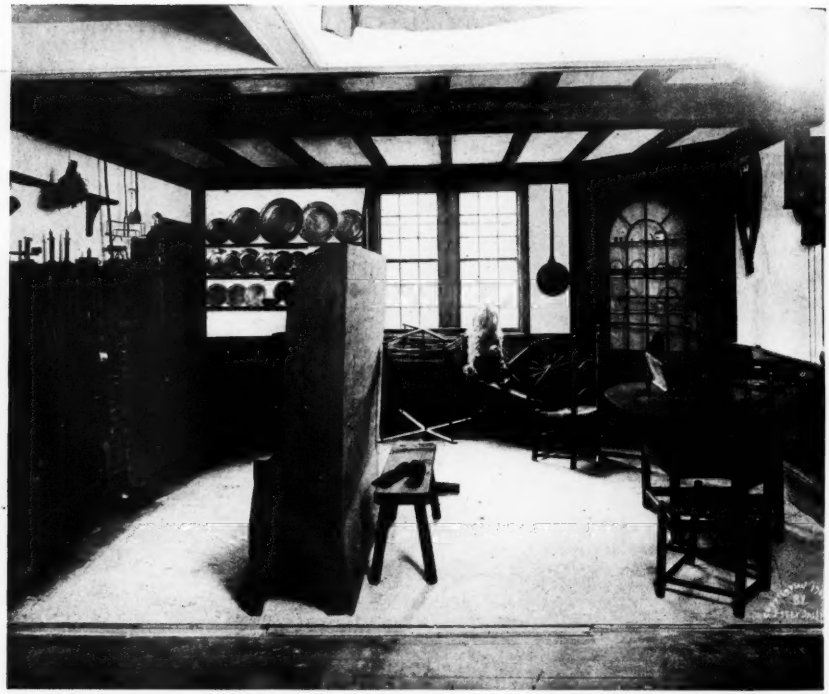
LIST OF EXHIBITORS.

The Abbott Laboratories, 4753 Ravenswood Ave., Chicago, Ill.
Adams X-ray Company, Woodward Ave., at Steward, Detroit, Mich.
Julius Aderer, Inc., 47 West 42nd Street, New York City, New York.
Alkalol Co., Taunton, Mass.
American Cabinet Company, Two Rivers, Wisconsin.
American Surgical Specialty Co., 6 East Lake Street, Chicago, Ill.
Antidolor Manufacturing Co., Springville, Erie County, New York.
Claudius Ash Sons & Co., 1-3 Union Square, New York City, New York.

The Bacon Manufacturing Co., 416 La Salle Bldg., Minneapolis, Minn.
Belding Bros. & Co., 68 Essex St., Boston, Mass.
The Bestol Co., Boston, Mass.
Frank S. Betz Co., Hammond, Ind.
Borine Mfg. Co., 551 West 42nd Street, New York City, New York.
Boston Dental Laboratory, 171 A Tremont St., Boston, Mass.
Harry J. Bosworth Co., Tower Bldg., Chicago, Ill.
Bristol-Myers Co., 281 Greene Ave., New York City, New York.
Burns Dental Casting Machine Co., 88 State St., Flushing, Long Island, N. Y.

Campbell Electric Co., Lynn, Mass.
Dr. C. L. Card, 801 Flanders Bldg., Philadelphia, Pa.
L. D. Caulk Co., Milford, Delaware.
A. C. Clark & Co., Grand Crossing, Chicago, Ill.
Cleveland Dental Mfg. Co., Cleveland, Ohio.
The Colgate Co., Jersey City, New Jersey.
Columbia X-ray & Electric Corporation, 131 E. 23rd St., New York City, N. Y.
The Columbus Dental Mfg. Co., Wager & Jackson Sts., Columbus, Ohio.
Columbus Aseptic Furniture Co., Columbus, Ohio.
Connecticut Coat & Cover Co., Shelton, Conn.
Consolidated Dental Mfg. Co., 120 Boylston St., Boston, Mass.
J. J. Crimmings Co., 136 Boylston Street, Boston, Mass.

Parke, Davis & Co., Inc., Hudson & Vestry Sts., New York City, New York.
Dean Dental Co., 120 Boylston Street, Boston, Mass.
Thomas J. Dee & Co., 5 So. Wabash Ave., Chicago, Ill.
Dental Chemical Co., Roslyn, Montgomery County, Pa.
Dental Mfg. Co., 220 West 42nd St., New York City, New York.
Dental Products Co., 5 So. Wabash Ave., Chicago, Ill.
Dental Specialty Co., 1638 California St., Denver, Colo.
Dentists Supply Co., 220 West 42nd St., New York City, New York.



Interior. At Essex Institute, Salem, Mass.

Longfellow's House.

Detroit Dental Mfg. Co., 20 Milwaukee Ave., Detroit, Mich.
Denver Chemical Co., 57 Laight St., New York City, New York.
The De Vilbiss Mfg. Co., Toledo, Ohio.
Donaldson Dental Mfg. Co., 1904 M. St., N. W., Washington, D. C.
The Dresch Laboratories Co., Toledo, Ohio.
De Sanno and Hoskins, 1252 N. Broad St., Philadelphia, Pa.

Eastman Kodak Co., Rochester, New York.
Edwards X-ray Corporation, 111-113 N. New Jersey St., Indianapolis, Ind.
Electro Dental Manufacturing Co., 3269 Arch St., Philadelphia, Pa.
Engeln Electric Co., 4601-11 Euclid Avenue, Cleveland, Ohio.

Fellows Medical Mfg. Co., 26 Christopher St., New York City, New York.
H. Fischer & Co., Inc., 705 Lexington Ave., New York City, New York.
H. G. Fischer & Co., 2343 Wabansia Ave., Chicago, Ill.
The Flaherty Mfg. Co., West Bend, Wis.
The Foregger Co., 47 West 42nd St., New York City, New York.
Friedman Bros., 22 E. Washington St., Chicago, Ill.

Garhart Dental Specialty Co., Hill Bldg., Somerville, No. 42, Mass.
General Electric Co., Schenectady, New York.
General X-Ray Co., Boston, Mass.
Goldsmith Bros., 29 E. Madison St., Chicago.

Harvard Co., Canton, Ohio.
The Halverson Co., 180 N. Dearborn St., Chicago, Ill.
The Heidbrink Co., 420 So. Sixth St., Minneapolis, Minn.
Mrs. W. M. Herriott & Son., L. Box 448, Indianapolis, Ind.
John Hood Co., 178 Tremont St., Boston, Mass.
Horlick's Malted Milk Co.. Racine, Wis.

International Radio Telegraph Co., 326 Broadway, New York City, New York.
J. W. Ivory, 21 No. 13th Street, Philadelphia, Pa.

J. D. Justi & Son, 1301 Arch Street, Philadelphia, Pa.

Kal-Pheno Chemical Co., 3218 Chestnut St., Philadelphia, Pa.
W. A. Kelsey, 3529 Ninth Ave., Minneapolis, Minn.
C. G. King Co., 162 Clifford St., Providence, R. I.
King's Specialty Co., Fort Wayne, Ind.
The Kolynos Co., New Haven, Conn.
Kress & Owen Co., 361 Pearl St., New York City, N. Y.

H. R. Lathrop & Co., 116 Beekman St., New York City, N. Y.
Lavoris Chemical Co., Minneapolis, Minn.
Lea & Febiger, 706 Sanson St., Philadelphia, Pa.
Lincoln Dental Mfg. Co., 1600 Chestnut St., Philadelphia, Pa.
Lochhead Laboratories, 120 Boylston St., Boston, Mass.

Manhattan Coat Factory, 3223 N. Halsted St., Chicago, Ill.
Metallic Hypo-Washer Co., 211 East 62nd St., New York City, New York.
H. A. Metz Laboratories, Inc., 122 Hudson St., New York City, New York.
C. V. Mosby Co., 801 Metropolitan Bldg., St. Louis, Mo.
J. Bird Moyer Co., Inc., 1212 Vine St., Philadelphia, Pa.
The Mynol Chemical Co., Real Estate Bldg., Philadelphia, Pa.

J. M. Ney Co., Hartford, Conn.

Only Safe Electric Mfg. Co., 1177 Washington St., Dorchester, Mass.

Park, Davis & Co., P. O. Box 7, Station V, New York City, New York.
C. E. Parkhurst, D. M. D., 79 Walnut St., Somerville, Mass.
M. F. Patterson Dental Supply Co., Box 1100, St. Paul, Minn.
Pelton & Crane Co., Detroit, Mich.
Pepsodent Co., 1104 S. Wabash Ave., Chicago, Ill.
Jacob Petry Retainer Co., 2022 Lowrie St., Pittsburgh, Pa.
C. H. Phillips Chemical Co., 128 Pearl St., New York City, New York.

Ransom & Randolph Co., Toledo, Ohio.
S. H. Reynolds Son & Co., Boylston St., Boston, Mass.
Ritter & Co., 200 Fifth Avenue, New York City, N. Y.
Edward Rowan, Inc., 625 E. 163rd Street, New York City, New York.

Safety Anaesthesia Apparatus Concern, 1652 Ogden Ave., Chicago, Ill.
Sentanel Remedies Co., Masonic Temple, Cincinnati, Ohio.
Lee S. Smith & Son Mfg. Co., Pittsburgh, Pa.
Specialty Mfg. Co., 15 Spruce St., New York City, New York.
Standard Emulsion Co., 141 Greene St., New York City, New York.

I. Stern & Co., 104 W. 116th St., New York City, New York.

Stratford-Cookson Co., 42 Ludlow St., Philadelphia, Pa.

Samuel G. Supplee Co., 1 Union Square, New York City, New York.

Thompson Plaster Co., Leesburg, Virginia.

Twentieth Century Broach Co., 51 E. 42nd St., New York City, New York.

The Thoro Corporation, 217 W. Huron St., Chicago, Ill.

Victor Electric Corporation, 236 South Robey St., Chicago, Ill.

Wappler Electric Co., Long Island, N. Y.

Washington Drug Products Co., 29 West 129th St., New York City, New York.

Webber Dental Mfg. Co., Canton, Ohio.

Weissfeld Bros. & Cross, 345 W. Broadway, New York City, New York.

S. S. White Dental Mfg. Co., 211 So. 12th St., Philadelphia, Pa.

Wilson & Wilson, 55 Sudbury St., Boston, Mass.

SPECIAL NOTICE TO EXHIBITORS.

The Exhibit Committee does not want to see any dealer absent from the largest Dental Exhibit ever held in the history of exhibits. The National Dental Association meeting to be held in Boston in August has already reached this state. Any part of the 2,000 feet of exhibit space is splendid and it is all sold except about 250 feet of space. Better get in line and do it **now.**

DR. F. O. KIDD,
Chairman of Exhibits,
P. O. Box 587, Fall River, Mass.

ATTEND 1920 MEETING AND SEE HISTORIC BOSTON.

When you make your plans for the meeting of the National Dental Association, in Boston, August 23 to 27, this year, it would be well worth while that you consider spending a few days extra in sight-seeing trips through the municipality of Boston proper and Greater Boston.

The local committee in charge of the meeting will provide at the information booth, booklets and convenient guides, containing a logical arrangement of material, that the stranger may visit the many historic points, in the simplest possible manner.

The entertainment committee is planning automobile trips for the ladies, during the convention, that will enable them to get at least a birdseye view of this very interesting and historic section of the country.

It is the purpose of this article to present to the readers as briefly as possible the many historical places and literary shrines of the various communities which are comprehended in the term "Greater Boston."

Old State House.

Boston was founded in 1630, by English Colonists, sent out by the Governor and Company of the Massachusetts Bay

Colony in England under the head of John Winthrop.

The name of Boston was selected in recognition of the chief men of the company who had come from Boston, England.

Let us consider an alphabetical trip thru Historic Boston. If one selects the points of interest which they especially desire to see, explicit information for this purpose may be obtained at the booth in the convention hall.

Arlington Street Church, Armory First Corps Cadets, containing collection and museum of Arms, Medals, Uniforms, Books and Papers.

Birthplace of the Rev. S. F. Smith, D. D., author of "America,' 37 Sheaf Street, Boston Common, originally set aside for common use as cow pasture and training field, where British troops were stationed during the siege of Boston where the British embarked for Lexington, April 18, 1775. Boston Massacre, site of riot between mob of Townspeople and British Guard March 5, 1770; Boston Stone, imported from England, 1770; Boston Tea Party, site marked by a tablet; Bunker Hill monument, a granite obelisk 221 feet high, on Breed's Hill which was the center of the battle of Bunker Hill.

Christ's Church (Old North Church), from its steeple were displayed Paul Revere's Lanterns, April 18, 1775; Constitution Wharf, where Old Ironsides was built.

Faneuil Hall, the cradle of Liberty, built 1742, burned 1761, rebuilt 1763, focus of Revolutionary Movement in Boston; Franklin birthplace; Green Dragon Tavern; John Hancock House, site marked by tablet.

Liberty Tree, marked by tablet; Longfellow House, Lowell House; Massachusetts Historical Society.

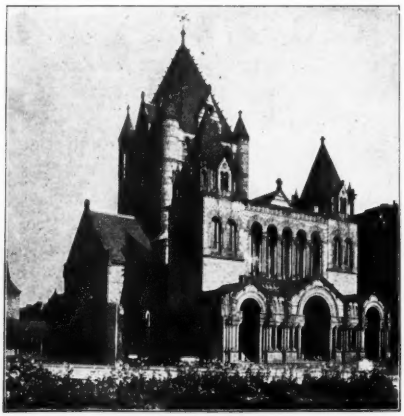
Old Fairbanks House, believed to be the oldest frame house standing in America today. Build 1636. Timbers and bricks and tiles came from England in 1633. (Visitors always welcome); Old South Meeting House, built 1729, large collection of historic relics (Admission 25 cents); Bostonian Society Collection of Relics (Admission free); Old State House, built in 1657; Paul Revere House.

Shaw Monument, State House, Beacon Hill, erected 1635. House of Representatives contains celebrated Cod Fish Emblem (Free).

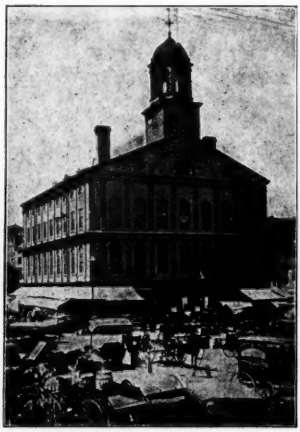
Among the public and semi-public buildings of interest to the visitor: Boston College; Boston Public Library; Boston University; Catholic Union; Chamber of Commerce; Children's Museum; Court House; Custom House; Fogg Art Museum (Harvard); Forsyth Dental Infirmary; Franklin Union; Geological Museum (Harvard); Germanic Museum, (Harvard); Harvard Medical School; Harvard Museum; Masonic Temple; Massachusetts General Hospital; Massachusetts Institute of Technology; Mechanics Building; Mineralogical Museum, (Harvard); Museum of Natural History; Navy Hospital; Peabody Museum, (Harvard); Tufts College; United States Arsenal (Watertown); Young Men's Christian Association; Young Women's Christian Association.

Leaving Boston proper, we have Lexington and Concord, which is considered by sight-seeing visitors, as well worth while. This trip is covered by a large buss. Among the points of interest in Lexington are the Common, Boulder Line of the Minute Men, Battle and Minute Men's Monuments, Historic Houses and Tablets, while in Concord are the Statue of the Minute Men, Battle Ground, the Old North Bridge, Historic Houses and Tablets.

Salem, Mass., sixteen miles from Boston, one of the most interesting cities

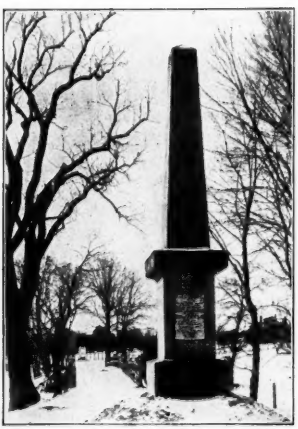


Trinity Church.



Faneuil Hall.

Soldiers' Monument.



Battle Monument, Concord and Lexington.

in the United States. Settled in 1626, four years before Boston. Some of the most important points of interest are the Grimshaw House, described in Hawthorn's story Dr. Grimshaw's Secret; Charter Street Burial Ground, Earliest place of burial, 1630. Fancifully sketched by Hawthorn. Governor Simon Bradstreet was buried here in 1697; and here lie the Browns, Lyndes, Hawthorns, Turners, Parkmans, and the early ancestors of the leading Massachusetts families. Captain Richard Moore, who came in the Mayflower, is buried here and his grave stone is the only original stone of a Mayflower passenger known to exist.

Custom House where Hawthorn wrote the Scarlet Letter; House of the Seven Gables, a favorite haunt of Hawthorn.

Essex Institute contains the largest and best collection of rare manuscripts, historical objects, documents and portraits in the United States. The old sea captains who have been famous marines lived in Salem and it is to them belongs the credit of giving to Salem the finest collection of antiques that may be found in any city.

Salem is rich in Museums, Peabody Academy of Science; Court House, contains the Witchcraft Records, Witchpins, etc.; North Bridge scene of Leslie's Retreat, Feb. 26, 1775; Witch House, Gallows Hill, where nineteen Witchcraft executions took place in 1692; John Ward House, Pickering House, Narbonne House.

To the student of Architecture, Salem furnishes much of interest. Its fine old residences, some of the old porches and doorways, are classed as the most beautiful in the country.

A trip to the South Shore is delightful and interesting, containing many old and beautiful towns, such as Hingham, one of the lovliest as well as one of the oldest towns in Massachusetts (settled in 1633). Its Old Ship Church, with pyramidal roof and belfry dating from 1681. It is the oldest and quaintest, existing meeting house in the country. In the burying ground near, is the grave of John Anderson, the war Governor.

Cohasset, with its irregular and rocky coast and extensive estate and elaborate grounds.

Scituate, with its pretty harbor, protected by rocky cliffs. This town is the scene of Woodsworth's Lyric, The Old Oaken Bucket.

Marshfield, the country home of Daniel Webster, the home of Elder Brewster; Miles Standish, John and Priscilla Alden. Here stands the Standish Cottage.

Kingston, a typical old colony town, has a number of interesting landmarks, the most notable being the John Bradford House.

Plymouth, where the Pilgrims landed, contains much of historic interest. This year especially is a good one to make a visit to this wonderful place. The celebration this year is talked of all over the country. Old Colony Park, Pilgrim's Hall, containing a collection of Pilgrims' antiquities, paintings, prints and records; Country Court House, with its documents of Pilgrim Days; Plymouth Rock, Cole's Hill, where the first house of the Colonists was set up. Burial Hill, the site of the Watch House, 1643 and Watson's Hill, where the first Indians appeared to the Colonists.

THE NATIONAL DENTAL GOLF TOURNAMENT, BOSTON, AUGUST 23-27, 1920.

The National Dental Golf Association was organized at New Orleans last October, and temporary officers elected.

The first tournament will be held in Boston on the Woodland Golf Course, Monday, August 23rd, 1920, during the meeting of the National Dental Association.

It is proposed to effect a permanent organization at that time. Officers will be elected, committees appointed, and suitable by-laws adopted.

It is desired that all members of the National Dental Association, interested in Golf, should become affiliated. An effort is being made to supply such persons with application blanks. There is an application blank at the end of Chick Evans' article on "Why Professional men should play golf," published in the April issue of The Journal of the National Dental Association. A blank may also be secured from the Secretary-Treasurer.

You should join the association whether you expect to attend the Boston meeting or not. The admission fee is $3.00, paid but once, and no other fees will be charged except to those who participate in the tournaments.

The following events have been suggested for the Boston meeting:

Thirty-six-hole medal play for Association championship.

Thirty-six-hole handicap medal play.

Thirty-six-hole against par.

Thirty-six-hole handicap against par.

Best ball two—some for 36 holes (Less one-half total handicap.)

Best ball four—some for 36 holes.

Eighteen-hole handicap medal play (morning.)

Eighteen-hole handicap against par (afternoon.)

Low net medal score for best 9 holes (morning.)

Low medal score for best 9 holes (afternoon.)

While it is the intention of the Association to conduct an annual tournament at the time and place of the National Dental Association meeting, it is not proposed that it shall in any way interfere with the Scientific program.

The following is a tentative draft of by-laws to be submitted at the meeting for consideration and adoption:

Name.

The name of this association shall be The National Dental Golf Association.

Executive.

The organization shall be governed by six directors, three of whom shall be chosen by the members of the Association at each annual meeting. They shall hold office until their successors are elected and qualify. They shall be known as President, Vice President, and Secretary-Treasurer, respectively, and their duties shall be such as usually pertain to the respective offices. The three last retiring presidents of the association shall be directors of the association.

Funds.

To provide funds for administration and for advancement on tournament expenses, the following dues and fees are required:

1st. An enrollment fee of $3.00 for the general funds of the association, to be paid upon enrollment as a member of the association. This may be at any time. The payment of this perpetuates the membership. Once a member, always a member.

2nd. A playing fee of $1.00 for the Tournament Fund of the association. This fee, and all hereafter, are payable at the first tee, and shall be paid only in the event that the member enter the tour-

nament, the idea being that aside from the enrollment fee, all expenses are paid by those who participate in any year.

3rd. The Tournament Fees: There shall be paid then, at the first tee, by all entrants to the tournament, fees as follows:

(a) The playing fee of $1.00 above mentioned.

(b) The enrollment fee of $3.00 above mentioned, if not already a member.

(c) The greens' fee, charged by the local club as arranged for by the local committee.

(d) The dinner fee, as determined by the local committee in charge.

Membership.

Any male member of the National Dental Association in good standing, who has the degree of D. D. S. becomes automatically a member of this association upon acceptance of its by-laws, and payment of the enrollment fee.

Play.

No member shall enter play except upon payment of the prescribed fees.

Tournament.

Shall be held either just before, or during, or just after the annual meeting of the National Dental Association, the time and place to be determined in advance by the directors, cooperating with a local committee of their own choosing; provided that the time shall not be in conflict with the scientific programs of the National Dental Association.

Handicaps.

Handicaps shall be limited to eighteen, members playing in any competition must play on their lowest club handicap, and when playing on their own club course shall be penalized two strokes.

The Annual Dinner and Meeting.

Shall be held on the evening of the day of the tournament.

Accounts.

No accounts shall be kept with the members. All privileges automatically follow compliance with the provisions of the by-laws.

Amendments.

These by-laws may be amended at any annual meeting by a three-quarter vote of the members present; or between meetings, by a three-quarter vote of the members who register their votes by mail within two weeks after a call therefor is made.

Any further information will be gladly furnished upon request.

RALSTON I. LEWIS, Sec.-Treas.,
25 E. Washington St., Chicago, Ill.
F. M. Casto, Chairman,
46 O. Rose Bldg., Cleveland, O.

NATIONAL SOCIETIES, 1920.

August.

23-24-25-26-27—National Dental Association, Boston.

23-24—National Association of Dental Examiners, Boston.

23—American Dental Library and Museum Association, Boston.

STATE SOCIETIES.

June.

Maryland, Baltimore.

New Hampshire, Manchester.

New Mexico, Albuquerque.

Utah, Provo.

23-25—Maine, Old Orchard.

21-30—Southern California, Los Angeles.

15-16-17—South Carolina, Columbia.

9-10-11—Georgia, Atlanta.

14—Colorado, Colorado Springs.

14-15—Wyoming, Cheyenne

15-17—Florida, Miami.

22-25—North Carolina, Wrightsville Beach.

28-July 3—Idaho, Pocatello.

30-July 3—Virginia, Lynchburg.

July.

14-16—New Jersey, Atlantic City.

13-14-15—Wisconsin, Milwaukee.

November.

18—District of Columbia, George Washington University, Washington, D. C.

Arizona, Phoenix.

December.

2-3-4—Ohio, Columbus.

10—Delaware, Wilmington.

Dates to Be Announced.

Arkansas, Little Rock.

California State.

Louisiana, New Orleans.

Oregon, Portland.

Washington, Tacoma.

MEETINGS STATE BOARDS OF DENTAL EXAMINERS.

Vermont—June 28-30, Montpelier; Harry F. Hamilton, Secy., Newport.

Wisconsin—June 21, Milwaukee; William Kettler, Secy., Milwaukee.

California—June 21, San Francisco; C. A. Herrick, Secy., San Francisco.

Pennsylvania—June 23-26, Philadelphia-Pittsburgh; A. H. Reynolds, Secy., Philadelphia.

South Dakota—June 23-26, Sioux Falls; L. S. Spencer, Secy., Watertown.

Maine—July 7-9, Augusta; Henry Gilman, Secy., Portland.

Montana—July 12, Helena, T. M. Hampton, Secretary, Helena.

Rhode Island—June 29-30, July 1, Providence, Ernest A. Carbonner, Sec'y., Providence.

New Jersey—June 28-30, July 1-2, Trenton, J. C. Forsyth, Secy., Trenton.

Wyoming—June 28-30, Cheyenne, Peter Apple, Jr., Secy., Cheyenne.

Alabama—June 21, Birmingham, A. R. Parks, Secy., Montgomery.

Delaware—July 14-15, Wilmington; Warren S. P. Combs, Secretary, Middletown.

West Virginia—June 22-24, Bluefield; R. Mason Hite, Secretary, Mannington.

District of Columbia—June 21-24, Washington; M. M. Dolmage, Secretary, Washington D. C.

LOUISIANA STATE DENTAL SOCIETY.

The fifty-second annual meeting of the Louisiana State Dental Society will be held in New Orleans, June 14, 15 and 16, 1920.

We have secured some of the best talent in dentistry to read papers.

Southern hospitality will resume its normal stride and the visiting members are promised a time never to be forgotten. This is to be the "meeting of no regrets."

All ethical dentists in the state of Louisiana and adjoining states are cordially invited to attend.

The Grunewald Hotel has been selected as headquarters and reservations should be made as early as possible.

J. CRIMEN ZEIDLER,
General Chairman,
Suite 1128-30 Maison Blanche,
New Orleans, La.

NEW MEXICO STATE DENTAL SOCIETY.

The New Mexico State Dental Society will hold its annual meeting at Albuquerque, N. M., June 21, 22 and 23, 1920.

CHARLES A. ELLER, Secretary,
Albuquerque, N. M.

CANADIAN DENTAL ASSOCIATION.

The Canadian Dental Association will hold its tenth biennial meeting in Ottawa, Canada, August 17th, 18th, 19th, and 20th, 1920.

SYDNEY W. BRADLEY, Sec'y,
206 Laurie Ave. W., Ottawa, Canada.

NORTH CAROLINA DENTAL SOCIETY

The forty-sixth annual meeting of the North Carolina Dental Society will be held in Wrightsville Beach, N. C., June 22, 23, 24 and 25.

H. L. KEITH, Secretary,
Hendersonville, N. C.

MAINE DENTAL SOCIETY.

The annual meeting of the Maine Dental Society will be held at Old Orchard, Maine, on June 23, 24 and 25, 1920.

B. C. GRAFFAM, Secretary,
Portland, Maine.

IDAHO STATE DENTAL ASSOCIATION.

The next meeting of the Idaho State Dental Association will be held in Pocatello, June 28 to July 3.

The meeting will be conducted on the post-graduate plan. The services of Drs. F. Ewing Roach and Arthur E. Smith, of Chicago, have been secured. Other teachers may be secured.

M. J. GOODE, Secretary,
Filer, Idaho.

SOUTHERN CALIFORNIA DENTAL ASSOCIATION.

The annual convention of the Southern California Dental Association will be held in Los Angeles, June 21-30, 1920.

BERT BOYD, Secretary,
1010 W. P. Story Bldg.,
Los Angeles, Cal.

VIRGINIA STATE DENTAL ASSOCIATION.

The fifty-first annual meeting of the Virginia State Dental Association will be held at Virginian Hotel, Lynchburg, Virginia, June 30th to July 3rd.

HARRY BEAR, Secretary,
410 Professional Bldg., Richmond, Va.

DELAWARE STATE BOARD OF DENTAL EXAMINERS.

The next examination of the Delaware State Board of Dental Examiners will be held in Wilmington, Municipal Building, 11th and King Streets, July 14th and 15th, beginning promptly at 9 A. M. All applications must be in the hands of the secretary at least ten days before the examination. Full information may be received by addressing Warren S. P. Combs, Secretary, Middletown, Delaware.

WEST VIRGINIA STATE BOARD.

The next meeting of the West Virginia State Board of Dental Examiners will be held in Bluefield, W. Va., beginning at 9 o'clock on Tuesday morning, June 22, 23 and 24, 1920. For further information and application blanks address R. Mason Hite, Secretary, Mannington, W. Va.

R. MASON HITE, Sec.

BOARD OF DENTAL EXAMINERS, DISTRICT OF COLUMBIA.

The next meeting of the Board of Dental Examiners of the District of Columbia, will be held June 21-24, at the George Washington University.

For information and application address:

M. M. DOLMAGE, Secretary
825 Vermont Ave., N. W..
Washington, D. C.

THE NEW JERSEY STATE DENTAL SOCIETY.

The annual meeting of the New Jersey State Dental Society will be a celebration of its 50th anniversary. It will be held on Young's Million Dollar Pier, Atlantic City, New Jersey, on July 14-15-16, 1920. The presence of men of National reputations will make it a memorable gathering.

Dr. W. W. Hodges, Chairman of the Essay Committee, announces that Dr. Edward C. Kirk, of Philadelphia; Dr. Otto U. King, Secretary of the National Dental Associatian; Dr. John V. Conzett, of Dubuque, Iowa, President of the National Dental Association; Dr. Thomas B. Hartzell, of Minneapolis, and Dr. Wayne Babcock, of Philadelphia, will present able papers.

Dr. Frank L. Manning, Chairman of the Clinic Committee, has arranged for study classes to be conducted by Dr. John V. Conzett, on Inlays; Dr. Thomas B. Hartzell, on Pyorrhea and Prophylaxis, and Dr. Frederick Ream, on the X-ray. In addition, general clinics will be given by men from the Component Societies, and by Clinical clubs.

Dr. Albert Kerr, Chairman of the Exhibit Committee, is planning for the greatest display of dental goods and preparations ever shown at a dental convention. The exhibit alone will be worth visiting and in conjunction with the other features, will make the meeting the best in the history of the society.

All ethical practitioners are cordially invited to attend. For a list of hotels or other information, address,

F. K. HEAZELTON, Secretary,
223 East Hanover St.,
Trenton, New Jersey.

REUNION 1915 CLASS BALTIMORE COLLEGE OF DENTAL SURGERY.

There will be a reunion of the Class of 1915, Baltimore College of Dental Surgery, at Baltimore on June 21st and 22nd, 1920. Class will assemble at college building at 2 P. M. on the 21st, where clinics and demonstrations will be held. There will be a banquet at one of the local hotels on the evening of the 21st and a theatre party the evening of the 22nd. For further information communicate with the Secretary of local committee. GUY O. LYON, Chairman.

JAS. H. FERGUSON, Secretary,
914 N. Charles St., Baltimore, Md.

WISCONSIN STATE DENTAL SOCIETY.

The 50th annual (Golden Jubilee) meeting of the Wisconsin State Dental Society will be held at Milwaukee, Wisconsin, July 13th, 14th and 15th, 1920.

DR. W. F. FAUST, Secretary,
308 North Ave., Milwaukee, Wis.

DELTA SIGMA DELTA FRATERNITY ANNUAL MEETING 1920.

The Thirty-sixth annual meeting of the Supreme Chapter of Delta Sigma Delta Fraternity will be held in the Copley Plaza Hotel, Boston, Mass., on Monday, August 23, 1920, at 9:30 A. M. Annual banquet at 6:30 P. M.

EDWIN T. DARBY,
Supreme Grand Master.

Attest:
R. HAMILL D. SWING,
Supreme Scribe.

PREPAREDNESS LEAGUE OF AMERICAN DENTISTS REPORT ON FRENCH-BELGIAN FUND.

The accompanying letter from Dr. P. Fontanel, Treasurer of La Aide Confraternelle, Paris, France, has suggested the thought that a great work might be accomplished by our National, State and Component Societies by adopting, as it were, a few of the orphans of our unfortunate brother dentists and supplying means for their education and support. A separate fund could be devised by each society entertaining this great object, or the sum required taken from the general treasury. A sum not to exceed $500 each year would, doubtless, be sufficient. Surely this plan would prove a source of constant interest and satisfaction to every member of our profession participating therein and also provides definite purpose for our efforts.

Will not the Secretaries of the various societies immediately communicate with the president of the League who will gladly outline the plan? You will recall that many organizations and independent groups of men throughout the country adopted many Armenian orphans in this way. Should we not use the same means to aid the children of our departed brother dentists? Let us be, not alone, brothers in spirit, but fathers in deed. We implore you to write now to,

J. W. BEACH, Pres. P. L. A. D.,
131 Allen Street, Buffalo, N. Y.

Dr. L. M. Waugh,
Treas. of the League of American Dentists, 576 Fifth Ave., New York.

My dear Doctor:

I am in receipt of your favor of January 2nd with draft on Credit Lyonnais for the amount of 21,698 francs, which will be turned over to our Committee for the Relief of French and Belgian Dentists, and you will receive a receipt from them in due time.

This kind act on the part of our League the Dentists of America will be far-reaching I can assure you.

We will keep you posted from time to time, the use to which our funds are being put.

The demands of our Paris Committee are very extensive, and your suggestion of further remittance gives us great encouragement.

Ever sincerely and fraternally yours,
Signed:

WILLIAM SLOCUM DAVENPORT.

Paris Le 20 Fevier, 1920.

My dear Doctor:

Doctor Davenport has handed to us the cheque of $2,000 which you kindly forwarded to him as first installment of the Preparedness League. The acknowledgment of such a generous gift has been entrusted to me and I beg you to accept the thanks of all our colleagues and the chief members of the Committee of "Aide Confraternelle."

I see that you inquired of Doctor Davenport what use we made of the money. I must state at once that our aim is twofold. First, we help those of our fellow

dentists whose connections have been lost because the towns they lived in have been destroyed. After years of service during the war, they came back to homes which are heaps of ruins and find no work to do in a deserted town. They are compelled to begin life anew; they must buy again the necessary apparatus and settle in new places where work is hard to get because they are strangers. We felt we ought to help them and do so by giving, or lending without interest, rather large sums. We have in the last six weeks paid out 10,000 f. for this purpose. Now we have also another aim, still more important in our eyes—we want to help our orphans.

Think how many wives, whose husbands had gone to the front, have remained in an impoverished home, the surgery being closed, waiting for his return and waiting in vain. They have not the wherewithal to live and yet there are children to be brought up. The Committee of "Aide Confraternelle" have thought that a proper feeling for the dignity of our profession made it imperative to them to bring up and educate those orphans as their fathers would have done.

We must be able, then, to give each at least 100 f. monthly 'till they are of age. And yet we must needs have 200,000 f. to do it, and if we wish to help the mothers as well, another 15,000 f. are necessary. We are far from being able to meet such expenses; since we have only 100,000 f. left, 35,000 f. having been spent in relieving some of the most distressing cases; what remains must be devoted to the help of those of our colleagues whose homes have been destroyed. We have, therefore, 35,000 f. short of our wants. So long as we do not possess such a sum, we cannot promise our orphans an annuity, and tell the mothers not to fret, that we have secured the children's livelihood 'till they are of age.

Now, my dear colleague, you know our aims and needs; you are acquainted with the use we make of the funds you sent us; for the sake of the solidarity which is so strong a tie among the members of our profession, do go on with your propaganda for our orphans, and if you can, send us thousands of dollars. We do get fresh subscriptions in France nearly every day, but they are small, for every French dentist has had to suffer from the war and is in much reduced circumstances. We duly invite to our meetings your two delegates, Doctors Davenport and Burkhart, and let them hear whatever we do. In future we shall give them accurate memoranda so as to allow them to give you every detail concerning our doings.

Believe in our gratitude for the help you have been able, so far, to afford us and please give a hearty message from us all to the members of the Preparedness League.

We remain, dear Doctor,

Very truly yours,

Signed: P. FONTANEL.

P. Fontanel, Tresorier,

La rue Vercingetorix, Paris.

BOOKS AND JOURNALS WANTED FOR A NATIONAL ASSOCIATION DENTAL LIBRARY.

The Association is gathering material for a great national dental library. We need your assistance. Send us the following items:

Dental text books, old or new; Dental Journals, College year books, College announcements, State Board Dental Reports, State Dental Society bulletins and programmes, State Board reports, Photographs, Engravings or Prints of Dentists, any print or picture relating to the practice of dentistry.

If the shipment weighs under fifty pounds send it by express, collect. If over that amount before sending please ask for shipping directions. Address:

THE NATIONAL DENTAL ASSOCIATION,

127 No. Dearborn St., Chicago, Ill.